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Publications

MACKENZIE VALLEY PIPELINE INQUIRY

IN THE MATTER OF APPLICATIONS BY EACH OF

- (a) CANADIAN ARCTIC GAS PIPELINE LIMITED FOR A RIGHT-OF-WAY THAT MIGHT BE GRANTED ACROSS CROWN LANDS WITHIN THE YUKON TERRITORY AND THE NORTHWEST TERRITORIES; and
 - (b) FOOTHILLS PIPE LINES LTD. FOR A RIGHT-OF-WAY THAT MIGHT BE GRANTED ACROSS CROWN LANDS WITHIN THE NORTHWEST TERRITORIES,
- FOR THE PURPOSE OF A PROPOSED MACKENZIE VALLEY PIPELINE

and

IN THE MATTER OF THE SOCIAL, ENVIRONMENTAL AND ECONOMIC IMPACT REGIONALLY OF THE CONSTRUCTION, OPERATION AND SUBSEQUENT ABANDONMENT OF THE ABOVE PROPOSED PIPELINES

(Before the Honourable Mr. Justice Berger, Commissioner)

Yellowknife, N.W.T.

September 26th 1975

PROCEEDINGS AT INQUIRY

Volume 70

CANADIAN ARCTIC
GAS STUDY LTD.

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APPEARANCES:

Mr. Ian G. Scott, Q.C.	
Mr. Stephen T. Goudge,	
Mr. Alick Ryder and	
Mr. Ian Roland	for Mackenzie Valley Pipeline Inquiry;
Mr. Pierre Genest, Q.C.	
Mr. Jack Marshall,	
Mr. Darryl Carter, and	for Canadian Arctic Gas Pipeline Limited;
Mr. Reginald Gibbs, Q.C.	
Mr. Alan Hollingworth	for Foothills Pipelines Ltd.;
Mr. Russell Anthony,	
Prof, Alastair Lucas	for Canadian Arctic Resources Committee;
Mr. Glen W. Bell and	
Mr. Gerry Sutton	for Northwest Territories Indian Brotherhood and Metis Association of the Northwest Territories;
Mr. John Bayly	for Inuit Tapirisat of Canada and the committee for Original Peoples Entitlement;
Mr. Ron Veale and	
Mr. Allen Lueck	for the council for the Yukon Indians
Mr. Carson H. Templeton	for Environment Protection Board;
Mr. David Reesor	for Northwest Territories Association of Municipalities
Mr. Murray Sigler	for Northwest Territories Chamber of Commerce

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Cr. Exam. by Hollingworth

Yellowknife, N.W.T.

September 26th, 1975

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

THE COMMISSIONER: I think we are ready to proceed. I think you are about to cross-examine Mr. Owen, Mr. Hollingworth?

MR. HOLLINGWORTH: Thank you, sir.

E.B. OWEN Resumed

CROSS-EXAMINATION BY MR. HOLLINGWORTH:

Q Mr. Owen, I note from your C.V. that you've had a long and varied career, and I notice that one of the last items you have down is that you were the leader of a delegation to the Soviet Union representing Canadian gas drilling, producing, processing and handling industry.

I'm a little confused though, because I don't seem to see a history of that behind, in the years previous, and I was just wondering where you acquired your knowledge of the oil and gas industry and pipeline industry generally?

A On the Westcoast line primarily.

Q On the Pointed Mountain line?

A Yes, I'm sorry, on the Pointed Mountain line. I have a bit of experience when

1 they built that line way back in the early '50's from
2 Montreal to Toronto, and with a branch up to Ottawa.
3 This was a fuel line.

4 Q Then you had seen construction
5 procedures for pipelines in operation at that time?

6 A Oh yes, yes that was one
7 reason why I was sent up because I had the knowledge.
8 I knew that from examining the material exposed in that
9 pit we were going to get a continuous geological section,
10 throughout the area, and when Westcoast Transmission
11 sent their application in to Ottawa, the first application
12 I was the one chosen or asked to comment on that
13 application. The results of my comments were that I was
14 assigned to this particular project.

15 Q I see, so then is it fair
16 to say that the two pipeline locations you visited were
17 the Toronto to Montreal oil line and the Pointed Mountain
18 gas line?

19 A Yes, I was actually mapping
20 the surficial geology and granular materials prior to
21 construction of the St. Lawrence Seaway, along the St.
22 Lawrence River --

23 Q Yes.

24 A -- and at that time they
25 were building that line through this area. It was an
26 excellent opportunity to get a good look at all the
27 various materials.

28 Q Well have you visited any
29 other lines on the Westcoast system?

30 A No, sir.

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1 Q Just the Pointed Mountain
2 line?

3 A Oh well, I have flown the
4 pipeline route from Beaver River to Fort Nelson.

5 Q Flown it?

6 A Yes, I have never landed,
7 but I have flown along it.

8 Q And I believe you said
9 yesterday that you had not visited Pointed Mountain
10 between the time of construction and the visit in June,
11 '74, is that correct?

12 A Yes, this is correct.

13 Q And have you been back
14 since that visit of June, '74?

15 A No sir, I have been in
16 other parts of the country.

17 Q Now you were on site
18 during the entire time of construction of the Pointed
19 Mountain line, which I understand was about two months
20 in duration?

21 A This is true, I arrived
22 just after the clearing operation had crossed over into
23 the Yukon border from B.C. They started at Beaver
24 River and worked north.

25 Q And what capacity were you
26 sent by Indian and Northern Affairs?

27 A I haven't got the terms of
28 reference. I looked for it, I couldn't find the terms
29 of reference but before I take off on a job I insist
30 that the Indian Affairs give me a terms of reference,

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1 as I want to know what I am supposed to do, and I try to
2 stay within those limits.

3 Q Sorry, do you have any
4 recollections?

5 A I can give it to you.
6 I went from Ottawa to Yellowknife and conferred with
7 the Regional Director there, and he in his own way gave
8 me another set of terms of reference which were actually
9 the same as the ones I have. I have a copy of that,
10 I can leave them out to you, and then I have the terms
11 of reference for the second trip, I have them here, in
12 which I was to assess the terrain damage. I have them
13 here with me.

14 Q Well I am not really
15 interested in particular detail, I just wondered whether
16 you were sent as an observer or an inspector or someone
17 with any powers over construction?

18 A I was sent to report upon
19 and map the soils, the rock, the permafrost, the ground
20 water, all these conditions which were encountered along
21 the ditch.

22 Westcoast were advised of this
23 and they were expecting me, and when I arrived on the
24 job, they had a place for me, a vehicle for me. They
25 were advised sometime before I arrived that I was going
26 to be there.

27 Q Well in fact you bunked
28 in with a member of their engineering department, didn't
29 you?

30 A I was right between the --

F. B. Owen
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1 right in between the Westcoast man and the marine pipe-
2 line man.

3 Q Mr. Yamauchi, I believe
4 it was?

5 A Mr. Yamauchi on one side
6 and Jack Meager on the other.

7 Q And Mr. Yamauchi was the
8 chief inspector on that line during construction?

9 A Well no, Parker was the
10 chief inspector. Yamauchi was the, I guess you would
11 call him the superintendent, he was the top man for
12 Westcoast on that job, in the field.

13 Q Mr. Yamauchi was?

14 A Yes.

15 I might say that the cooperation
16 I had with Westcoast was fantastic.

17 Q I am glad to hear that.
18 Now, in your visit of June, 1974, you met with one West-
19 coast official and I believe that's Mr. Logan?

20 A I met Mr. Logan on the
21 pipeline. He visited us. I did not contact Mr. Logan
22 before I went up on the job.

23 Q He came up and saw you?

24 A He came up and saw us,
25 actually the young lady I had with me who was a botanist,
26 had contacted Westcoast regarding types of seed or
27 something they had used during their revegetation, and
28 Mr. Logan found out about that at the time and he
29 visited us for about half an hour one day.

30 He just dropped down with a

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1 helicopter onto the job, and we had a few words
2 together.

3 Q Did you see anyone else
4 from Westcoast Transmission?

5 A At no time.

6 Q This is during 1974?

7 A This is true.

8 Q And that visit occurred
9 on June the 13th? That was the second day of your tour?

10 A That I met Mr. Logan?

11 Q Yes?

12 A I think so, yes.

13 Q Now you said, and I want

14 to refer to your published report Observations on the
15 Right-of-way of the Pointed Mountain Line, you said
16 both in it and on the -- in the examination in chief
17 that you felt generally terrain conditions were from
18 fair to good on the line?

19 A This is true.

20

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1 Q And you felt that the
2 company, that's Westcoast, had been very careful during
3 construction to avoid any unnecessary terrain damage?

4 A They certainly had
5 compared to other operations that I have seen.

6 Q And you also say on page
7 13 of your report that most slopes are reasonably stable
8 except those of the LaBiche and the Potaneelee
9 Rivers?

10 A This is true.

11 Q Are you familiar with
12 the types of differences between ordinary pipeline
13 construction and proposed Arctic Gas Line construction?

14 A Not in its entirety.
15 I have seen parts of the Arctic Gas construction plans,
16 but I'm not completely familiar with them.

17 Q Well, are you familiar
18 with the fact that Arctic Construction involves snow
19 roads as opposed to straight grading which would,
20 as you showed in your slides obviously, done on the
21 Pointed Mountain line?

22 A Yes. I realize they plan
23 on snow roads. They propose snow roads.

24 Q And you're aware that a
25 good deal of the land that the proposed line goes through
26 is permafrost whereas on this Pointed Mountain line,
27 about 7300 feet, I think you said was encountered?

28 A Something of that order,
29 yes.

30 Q And of course, Pointed

1 Mountain is a hot gas pipeline, not a chilled gas
2 pipeline?

3 A Yes sir.

4 Q Do you know the temperature
5 that the gas is transmitted at on Pointed Mountain?

6 A I was told that it left
7 the wellhead at 315 degrees and that it entered the
8 trunk line at 100 degrees, that's what I was told. I
9 understand there was some variance in those temperatures
10 but that, -- at that time that's what I was told.

11 Q I just would like, if I
12 can, to go through your report and go over a couple of
13 statement that you've made, if we might and see if I can
14 get some clarification on them. On page two, at the
15 top, you make reference to seismic and maintenance
16 equipment moving along the line and across it. You
17 said yesterday, I believe that Mr. Logan pointed out to
18 you that maintenance equipment had been in on the
19 LaBiche Crossing and LaBiche Hill, repairing that.
20 But I believe you also said that you're in no position
21 really to know whether it's seismic equipment or maintenance
22 equipment that's been on the line in those cases?

23 A Yes, this is true.

24 There's no way that I could tell at least, who was
25 responsible for that damage. I pointed that out in my
26 report and the idea that I left with Indian Affairs
27 was that they should have the seismic people go in and
28 clean up the damage that they have done, and then what
29 was left over. in regards to damage could be blamed on
30 Westcoast, but this would be an extremely hard thing to

1 do. I don't see how they could do it actually but this
2 was the only suggestion I could make.

3 Q Now on page six, there's
4 a reference to borrow pits opened by the seismic operators,
5 I wonder if you're aware whether they obtained the
6 necessary permits to do that or not?

7 A I do not know whether they
8 did or not, whether it would be in their permit or not.
9 It might be included in their permit, this is possible
10 if they drew the attention of INA, Indian Affairs, that
11 they proposed to cross that pipeline by these cross-overs
12 which would require a borrow pit. If that was laid
13 down in the original application, perhaps it was in the
14 permit, I don't know but I had to point that out that
15 this had happened, this was part of the job.

16 Q Now also on page six, there's
17 a reference to the rights of -- or rather the crossings
18 on the right-of-way. I was just wondering if it was
19 possible, and this I'm just asking out of interest more
20 than anything, I'm wondering whether it's possible that
21 possibly only three of these crossovers are in the
22 Northwest Territories, and the balance would be in other
23 jurisdictions that is to say, the Yukon and British
24 Columbia?

25 A Well we could work it
26 out. Some were in B.C., most of them in the north end,
27 which would be the Northwest Territories, I had the
28 chainages for the nine here and I haven't got the plan
29 with me with those chainages on, but it wouldn't be very
30 hard to find out which. Most of them are in the Northwest

1 Territories.

2 Q Now did you ask Mr.
3 Logan about these crossings when he came down and saw
4 you on the line?

5 A Yes, I did.

6 Q And did he advise you
7 what Westcoast's standard procedure was when they
8 heard about these crossings from seismic operations?

9 A Mr. Logan told me he
10 hadn't a clue. He didn't say that in exact words, but
11 he said -- I asked him who was responsible for maintaining
12 this road and keeping these seismic people off, and he
13 thought, he said he didn't know but he thought it was
14 the National Energy Board, I think that's what he
15 said. I've written it up here anyhow, it's in the
16 report.

17 Q And do you in fact know
18 whether it is the National Energy Board that has
19 jurisdiction?

20 A I sent my report to
21 Indian Affairs, I put down exactly what Mr. Logan had
22 said, it's in here, I believe, and also I went right down
23 to the Indian Affairs chap, the R.M.O. at Fort Liard,
24 and asked him about it and he didn't know at all. To
25 me, this is a real interesting point, that no one seems
26 to have any control over equipment of any kind going
27 up and down the right of way.

28 Q But this is some confusion
29 among government officials that you're speaking of here?

30 A They certainly are confused

1 but I think Westcoast was too.

2 Q Well if I suggested to you
3 that Westcoast's standard procedure when it received a
4 request from a seismic operator was to refer the matter
5 to the National Energy Board and the Department of
6 Indian and Northern Affairs would you be in a position
7 to agree or disagree with me?

1 A I really couldn't comment,
2 sir, because I don't know. I just reported what I was
3 told in the field.

4 Q Have you any objection to
5 these cross-overs, apart from the fact that no one seems
6 to know who has the authority to authorize them?

7 A Personally I have no
8 objections. I don't think the integrity of the pipe was
9 interfered with in any way, it was just that they didn't
10 seem to be following any system to it, any agreement
11 among people as to who was responsible.

12 Q Well if I told you that
13 the Department of Indian and Northern Affairs had ordered
14 Westcoast not to take those crossings out, would you be
15 in a position to agree or disagree with me?

16 A No sir, I would not. I
17 hadn't realized that had taken place.

18 Q Now at page 7, there's a
19 statement made in the first complete paragraph about
20 borrow pits opened by Westcoast near Fishermen Lake to
21 repair the pipe that came to the surface there, and you
22 state in the last sentence, "As far as is known, no
23 attempt was made to determine the presence of permafrost
24 on the site before these pits were opened".

25 Now, you say you spoke to the
26 Indian and Northern Affairs representative in Fort
27 Liard, did you?

28 A Yes, that's true.

29 Q And do you recall his
30 name?

1 A I'm sorry, I don't recall
2 his name. He was the assistant R.M.O., the R.M.O. who
3 was actually in charge was not available. I could
4 picture his face, sir, but I'm sorry, I cannot give you
5 a name. He's still there.

6 Q Does the Rick Hagen
7 mean anything to you?

8 A Yes, yes, Rick Hagen,
9 Rick.

10 Q And Mr. Hagen didn't say
11 to you that he had directed the Westcoast people to the
12 exact sites of those locations and directed them to
13 take their borrow from there?

14 A No sir, at no time did he
15 tell me that. On the line, we hadn't yet got to that
16 particular spot. I asked Mr. Logan at the time that I
17 met him, whether or not they had done any drilling in
18 there, because I knew that this was in a permafrost
19 area, in a general area. I didn't know whether they had
20 permafrost in that specific point, but it was a very
21 shallow type of -- all they did was scrape off the sur-
22 face, just enough that they could start thermokarst if
23 there was any permafrost in that area. That's what I
24 was interested in, the results of the borrowing.

25 Q Well I'm just a little
26 concerned because there seems to be some criticism
27 of Westcoast there for opening those pits without doing
28 some fundamental research, and I just wondered if you
29 -- whether you were aware or not of whether Mr. Hagen
30 had directed Westcoast to those sites, and you say you

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1 did not?

2 A No sir, I did not.

3 Q Well now, on page 12 of
4 your report, at the top, you state "During the field
5 investigation it was noted that during its maintenance
6 program, Westcoast had opened a number of borrow pits
7 along the sides of the right-of-way, and thus effectively
8 increased its width to 200 to 300 feet", and I think
9 Mr. Bayly made some reference to that last night in his
10 cross-examination. Then I would refer you back to
11 page 6, the first complete paragraph there says,
12 "Considerable terrain damage has resulted from the open-
13 ing of small borrow pits along the edges of the pipeline
14 right-of-way by the seismic operators to obtain materials
15 to construct cross-overs".

16 Now, are you talking of differ-
17 ent borrow pits there, or are you in fact talking about
18 borrow pits that have been opened by seismic operators
19 and attributing those to Westcoast?

20 A The area that I referred
21 to as the 200 to 300 feet wide, was at the Pointed
22 Mountain. Those borrow pits were just off to the west
23 side, and they actually --all they did was extend the
24 right-of-way out to the west to get material.

25 Normally in a borrow pit, they
26 require approximately 300 feet between the right-of-way
27 and the borrow pit. This is true in the highway, and
28 I think it also holds with the land use regulations, but
29 in this instance, the borrow pits that were opened up
30 by Westcoast in this particular area, were actually just

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1 a widening of the right-of-way.

2 Q Well what length of the
3 right-of-way would be covered by this comment of yours
4 that it had been increased from 200 to 300 feet.

5 A You mean the right-of-way
6 linear length along?

7 Q Yes.

8 A Oh perhaps 200, 300 feet
9 of that order. These weren't extensive borrow pits but
10 they did not go down very deep, and because of that,
11 they had to take in more area laterally.

12 Q Well have you any know-
13 ledge that it was Westcoast who opened those borrow
14 pits?

15 A Well that's where the
16 material come to cover the exposed pipe, the pipe that
17 came up to the surface.

18 Q And did someone advise
19 you that that was the case?

20 A Yes, Mr. Logan did ---

21 Q I see.

22 A -- at the time that I
23 asked him whether or not they had drilled them.

24 Q Well I put it to you, sir,
25 that there were actually three borrow pits in total
26 opened by Westcoast along the entire line during its
27 maintenance program; two at Fishermen Lake and one at
28 the LaBiche crossing.

29 A To my knowledge, this is
30 the only three that I could actually say that Westcoast

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1 had opened up.

2 Q And the one on the
3 LaBiche has not increased the width of the right-of-way?

4 A Well that is open to
5 argument. You would have to go up there and do some
6 measuring. To my mind it had.

7 Q And in fact, that pit was
8 opened at the direction of Indian and Northern Affairs
9 for the burial of stumps?

10 A Possibly. I have no
11 knowledge whether they were opened up. When I wrote my
12 report, I was describing what I saw.

13 Remember, the definition of a
14 borrow pit. Sometimes that confuses us, but a borrow
15 pit can be just a little excavation where one front end
16 loader has taken out one load, and moved it to another
17 spot. That is a borrow pit. It's the same definition
18 if you had a thousand front end loaders taking out a
19 thousand loads each, it's the same definition.

20 Q Okay, well I just wanted
21 to pin down exactly which areas you were talking about
22 there.

23 Now, not having been back, I
24 guess you wouldn't be aware then whether the LaBiche
25 and Kotaneelee crossings have been repaired?

26 A I understand that since
27 we were there, Westcoast Transmission has done quite a
28 lot of rehabilitation work. I am not familiar with all
29 that they have done. I have talked to chaps from
30 Indian Affairs who have been up there since I was there,

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1 and I understand there's been quite a lot of work done
2 since June, '74.

3 Q Now, when we were looking
4 at your slides yesterday, you stated that the gathering
5 lines had been cut by hand?

6 A Yes sir.

7 Q And then you showed a
8 picture from the top of Pointed Mountain, and there
9 appeared to be what to me were bulldozer tracks on the
10 path?

11 A This is true. Maybe I
12 left the wrong impression. It was just the low ground
13 in the bush that was cleared by hand.

14 Q And that's swampy land,
15 isn't it?

16 A Yes, this is true, where
17 the permafrost, discontinuous intermittent permafrost
18 existed.

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1 Q Now, in that Fisherman
2 Lake area, you stated that damage was caused when hot
3 gas came through the pipe and raised the pipe.

4 A Yes sir.

5 Q I assume you don't know
6 whether that hot gas was put there at Westcoast's --
7 because of Westcoast's acts or because of Amoco's
8 acts?

9 A I beg your pardon?

10 Q Are you aware whether
11 it's Amoco's fault or Westcoast's fault --

12 A I have no idea sir.
13 I have no idea. Are you familiar with Mr. J.A.
14 Heginbottom's report?

15 Q I've just perused it.

16 A This is the basis for that
17 -- for that statement. I took that right out of
18 Heginbottom's report. I checked with Mr. Logan at that
19 time and he confirmed what was in there, but what's
20 happened. That there had been a temperature increase
21 in the line and consequently the pipe had expanded and
22 has risen.

23 Q Now that area to the
24 -- between the end of Fisherman Lake and the hill
25 going up to what becomes Pointed Mountain is a reasonably
26 swampy area, isn't it?

27 A Describe that again
28 please?

29 Q The area where the
30 pipe runs between the end of Fisherman Lake and the hill

1 rising up to Pointed Mountain is a very swampy area, is
2 it not?

3 A Yes, it's much the same
4 as what Westcoast hit coming around the end of Fisherman's
5 Lake. Maybe not quite --

6 Q I'm talking about where
7 the pipe is, where the pipe rose, is a very swampy
8 area isn't it?

9 A Extremely swampy.

10 Q And at times of the year,
11 that's covered by water, that whole area?

12 A Well I haven't been there.
13 I've never seen it covered completely with water. I haven't
14 been there all year round but I presume that there would
15 be an awful lot of water in there. There are two creeks
16 flowing through there.

17 Q And you would be able to
18 agree with me that the probability is that those creeks
19 become essentially wide ponds at various times during
20 the year, during the spring or after a heavy rain?

21 A I wouldn't go so far as
22 to say they became ponds, but they would certainly be
23 much wider than they would be say in the fall.

24 Q Well are you in any
25 position to disagree with me if I told you that that does
26 in fact happen?

27 A No sir, I am not.

28 Q So that when you show the
29 slide, as you did, of the repaired section of that line
30 with the water running in different courses over it,

1 isn't that readily explicable if the area is frequently
2 covered entirely by water?

3 A In one way yes, but
4 at the time we took it in June, the water wasn't as high
5 as I would assume it was. It certainly wasn't as high
6 as say even in the winter time because in the winter
7 when they were building it, I couldn't get through with
8 my four by four, and we had difficulty getting through
9 there. The welding trucks and what not, it was a rough
10 place to get in.

11 Q Well you seem to have some
12 fault with the repair work that was done there because
13 you didn't think the streams had been channeled properly
14 and I'm suggesting to you that because of the nature of
15 that area, which does become covered entirely with
16 water sometimes, that it's impossible to channel those
17 streams?

18 A This may be true. This
19 may be true. I really can't say one way or the other.
20 on that.

21 Q Now you also showed some
22 pictures of some ponds that have developed over ice
23 lens areas and I would assume that that had been
24 predicted prior to the building of the pipeline, hadn't
25 it?

26 A You mean the permafrost
27 areas had been predicted?

28 Q Yes.

29 A Some of them had. I don't
30 know whether you're familiar with the procedure which

1 Westcoast used in their borings prior to construction,
2 but they only -- they put in 68 borings in 34 miles
3 which is roughly one boring a half mile. This was done
4 by the surveyors that went through to put in the line,
5 located the route, and then subsequently to that,
6 Shultz' consultant to Westcoast went in and examined
7 these areas which the surveyors had found permafrost.
8 The surveyors across the end of Fisherman Lake
9 drilled six holes in three they found permafrost.
10 They found permafrost in one other spot and that was
11 adjacent to that small lake just north, a mile and a
12 half north of Kotaneelee. They drilled one hole there
13 and got permafrost. When Shultz went in, all they did
14 was to confirm that. They didn't find any more permafrost.

15 Slaney went in, for Indian
16 Affairs, the same year, but they extended the perma-
17 frost, they located more permafrost than what Shultz had
18 found but in both those companies said that it wasn't
19 important to go back and determine the limits of the
20 permafrost, so there was a lot of permafrost that they
21 missed completely.

22 Q So it was known that this
23 line was going to go through some permafrost?

24 A Yes.

25 Q And it was known that it
26 was going to be a hot gas pipeline?

27 A Yes.

28 Q So that surely the ponding
29 is the natural effect of the hot gas pipeline going
30 through the permafrost?

1 A I would assume so, yes.

2 Q And presumably Indian
3 Affairs had no quarrel with that reasonable prediction
4 that must have been made prior to construction of the
5 line?

6 A Well I think that in
7 the permit, now I'm not sure of the wording, but wasn't
8 it stated in the permit that permafrost had to be
9 taken out from around the pipe. In fact that big
10 ice lens there, that -- that big ice lens in which
11 you had the thermokarst you saw it, that big
12 massive piece of ice?

13 Q Yes sir.

14 A That was only about
15 three feet from the pipe.

16 Q But you stated the ice
17 was being taken out from around the pipe area, didn't
18 you during construction?

19 A It was taken out but it
20 wasn't, to my mind, taken out far enough.

21 Q Did you raise that point
22 with the Westcoast officials during construction?

23 A Not that particular one,
24 I did other times.

25 Q I see.

26 But studies have shown that there is 7300 feet or about
27 a mile and a half of permafrost over a 33 mile line?

28

29

30

1 A Those are my figures.

2 Q Now with the Kotaneelee
3 crossing, you suggested that that should have been cut
4 at the top, as I recall, because you stated that the
5 land went up and then went down to the river?

6 A Yes.

7 Q Well let me take you a
8 little further back, and doesn't it go down from a hill,
9 then up and then down to the river?

10 A The terrain is very
11 rugged in there, amazingly so for a glacial acustrine
12 --

13 Q Do you agree with me
14 that that's the lay of the land, that a hill comes down
15 and then there's a knoll that goes up and then it goes
16 down the Kotaneelee?

17 A This is right.

18 Q And you're suggesting
19 that knoll should have been cut off?

20 A Not cut off completely,
21 but I think they could have lowered it a bit.

22 Q Oh I see, so you are not
23 suggesting the whole thing had come off?

24 A Oh no, by no means, this
25 would have been a very costly -- and where would they
26 put the material?

27 Q Well also you would have
28 had a straight runway down the hill, and made the hill
29 even longer, and promote erosion by doing that.

30 A A much less slope.

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1 The grade would have been much less.

2 Q Now I believe you said
3 in taking of gravel from the Kotaneelee bed, that West-
4 coast people didn't seem to know who was responsible,
5 in government for the consent that's required to do that?

6 A Yes, sir, this is true.
7 I pointed out in my report that this had happened, and
8 I questioned who had -- how it came about, because at
9 the time that we were working in there, they had to get
10 permission even to take out a thousand yards out of a
11 small bar on the LaBiche, and this was in the winter time
12 with no water around at all.

13 Q Well it seems to me you
14 stated yesterday, and maybe I have this wrong, that the
15 Westcoast people did not seem to know who the responsible
16 government officials were for taking that gravel from
17 the beds?

18 A No sir, I did not say that,
19 at least I don't recall saying that.

20 Q Well then if I stated to
21 you that the Indian Affairs people were there at the
22 time it was taken up, you wouldn't know whether that was
23 right or not?

24 A No sir, all I did in my
25 report was to describe what had happened at the Kotan-
26 eelee and question what had happened, and in Ottawa no
27 one knew. Perhaps they knew in the field here at Fort
28 Liard, but --

29 Q So you wouldn't know that
30 the Fisheries people had also been observing the entire

1 operation?

2 A No sir, I did not. I
3 found out after that they had been.

4 Q Now, just to clarify this
5 business about the bending prior to the ditching of the
6 pipe, there seemed to be some suggestion that this was
7 contrary to the permit that Westcoast has from the
8 Department of Indian and Northern Affairs to construct
9 the line.

10 A Not the permit, sir.
11 This was the contract between Westcoast and Marine
12 Pipeline.

13 Q And it's of no consequence
14 to Indian and Northern Affairs whether that bending is
15 done before or after the ditching?

16 A No, sir.

17 Q And it's of no consequence
18 to the integrity of the line, providing the ditching is
19 done properly?

20 A This is correct.

21 Q And the concrete weights
22 you spoke of as being rejected, they were in fact
23 rejected by Westcoast Transmission, were they?

24 A Yes, sir.

25 Q Well I just wanted to
26 clarify, a good deal of the criticism that you have
27 singled out here is directed at either the seismic
28 operators or various government departments.

29 A The criticism -- I
30 criticized seismic, yes.

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1 Q And you are not criticizing
2 government departments, is that implicit in your answer?

3 A Well I think that's a
4 loaded question, sir.

5 THE COMMISSIONER: Why not let
6 us draw our own conclusions?

7 MR. HOLLINGWORTH: All right
8 then, fine.

9 Q And I also understood
10 that you felt that a reasonable time was required to let
11 this area stabilize, and that's why you didn't want to
12 go back the summer following the construction of the
13 pipeline?

14 A Yes, sir.

15 Q And do you feel that it
16 might be reasonable to wait somewhat longer for an
17 area to stabilize than you waited?

18 A Well in the summer of 1971,
19 I was up at Fort Liard with AMOCO and Chevron, checking
20 out some proposed seismic, and when I left there I took
21 the opportunity to fly down and look at the Beaver River-
22 Fort Nelson line. It was then, just had one spring
23 break-up, and I got a pretty good look at it, and it was
24 obviously there was a lot of terrain damage, and the
25 pipe was exposed, and breakers were which way and that
26 way. It didn't look good, but this was not in the
27 Territories, so it didn't come under the land use
28 regulations.

29 I thought perhaps that as time
30 went on, this damage would become more apparent as

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1 surface water erosion took place, and in my own mind, I
2 thought perhaps it would be better if I waited a couple
3 of years before I went in. If Westcoast went in earlier
4 and repaired this damage as it occurred, rather than
5 wait until it became some obvious, then perhaps there
6 wouldn't have been as much line went in there. In fact,
7 there wouldn't have been.

8 Q In your opinion?

9 A Yes, in my opinion, yes.

10 Q Now you have flown over
11 the Beaver River line since the initial flight that
12 you just spoke of and --

13 A No sir, I have not. I
14 was over there just that once, and it was purely because
15 I was trying to compare the seismic lines which these
16 companies had proposed with the type of thing which you
17 people were doing.

18 Q Now were you aware that
19 an environmental survey of the Pointed Mountain line is
20 being conducted by the same Schultz firm that you
21 referred to earlier?

22 A No sir, the only Schultz
23 report I have ever seen is the one that was done in '71.

24 Q And you wouldn't know then
25 that this study has been commissioned by Westcoast
26 Transmission?

27 A No, sir.

28 Q Now on page 14 of your
29 publication, in paragraph 4A, you state in the last
30 sentence that "Westcoast's present maintenance program

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1 seems stop-gap in nature".

2 Now what is this, the action at
3 Fisherman Lake that causes you to make that statement?

4 A Not only Fisherman Lake,
5 sir, but for many of the things that took place. The
6 berm -- well Fisherman Lake is one, but the berm over
7 the Kotaneelee, the pipe was exposed, so they pushed
8 gravel over the pipe. They pushed it out of the river.
9 Okay, so they got permission from Fisheries, but that
10 berm is not staying. When I was there it was actively
11 eroding, and I understand that since then Westcoast have
12 been in and completed the berm, and they actually went
13 and opened up a quarry close by within a mile. They are
14 hauling rip-rap in, large dimension stone, to try to
15 stop more erosion.

16 This is hit and miss, because
17 I don't think there is any way that for the length of
18 that pipe, that they can just continually keep adding
19 material over that pipe. They have to bury it, this is
20 my opinion.

21 Q But this is your opinion?

22 A Yes, sir.

23 Q And the opinion of the
24 advisors to Westcoast Transmission might be otherwise?

25 A Oh definitely.

26 Q And you say that,
27 carrying on that sentence, "that the maintenance is
28 probably similar to those carried out in other parts
29 of their" meaning Westcoast, "...gas transmission
30 systems in Alberta and British Columbia."

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1 A Yes.

2 Q Now you haven't been to
3 the other parts of the system?

4 A No sir, but I have spoken
5 to many of your people who have.

6 Q So that you are going on
7 what other people have told you in making that state-
8 ment?

9 A This is true.

10 Q I see.

11 A I have talked to many of
12 your inspectors who have worked on it. You will perhaps
13 notice, read the last part of Mr. Heginbottom's report
14 in which he records a conversation with Mr. Logan?

15 Q I don't think so.

16 A Mr. Logan, I can read it
17 out to you, but in that he says that they plan on doing
18 a similar rehabilitation effort on the Beaver River-
19 Fort Nelson line as they were doing on this line. It's
20 written in Mr. Heginbottom's report.

21 So to me it was obvious that
22 the whole deal -- Westcoast will carry along with the
23 same sort of rehabilitation efforts that they are doing
24 on the Pointed Mountain line. They will carry that on
25 down into Fort Nelson.

26 Q Which is another 25 or 30
27 miles on from Beaver River?

28 A Oh no. The pipeline
29 from Beaver River to Fort Nelson is -- it's over a
30 hundred miles, 136, is it?

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1 Q Now have you referred to
2 other areas of Westcoast's line when you are making
3 this statement?

4 A No sir, only from what Mr.
5 Logan told me.

6 Q Okay, thank you. Now did
7 you report general satisfaction to Mr. Logan when he
8 came and visited you on the line?

9 A Yes, I told him that the
10 overall picture as I have in my report was good, but
11 there's these bad areas.

12 Q And you reported general
13 satisfaction to Mr. Kavanagh of Westcoast when you spoke
14 to him on the telephone sometime later?

15 A I'm sorry, I don't recall
16 any conversation with a Mr. Kavanagh, but I have spoken
17 to several Westcoast people on the telephone.

18 Q And did you discuss the
19 performance bond with Mr. Logan?

20 A Oh no sir, that's beyond
21 my depth. I'm not --

22 Q You spoke to Mr. Bayly
23 about it yesterday and you thought it was \$500,000.00.

24 A I really do not know how
25 much it is. I know they have a bond and when I went up
26 there, when I was first asked to go up and test the
27 terrain damage, the reason given to me was that West-
28 coast was asking for their bond back, and they wanted
29 someone up there to see whether they had done enough
30 rehabilitation work to warrant giving back the bond.

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1 Q Well I put it to you, sir,
2 that you discussed this with Mr. Logan when he visited
3 you on the line? .

4 A I may have, I can't recall
5 all our conversation.

6 Q I put it to you further
7 that you stated to him that you were going to recommend
8 that that bond be reduced?

9 A No sir, I don't recall
10 that. I may have said it, and I can't deny it, but I
11 don't recall it.

12 Q Be reduced specifically
13 from \$500,000.00 to \$50,000.00?

14 A I don't think I said that
15 sir, because I never really had any idea how much the
16 bond was. I know one figure in Ottawa was 700,000,
17 that's why I could not say yesterday just what it was.
18 I really don't know what the bond was.

19 Certainly it's not in the
20 permit.

21 Q Well are you denying this
22 conversation took place, or are you saying you don't
23 recall?

24

25

26

27

28

29

30

A I don't recall.

MR. HOLLINGWORTH: Thank you
sir, I have no more questions.

THE COMMISSIONER: Re-
examination?

RE-EXAMINATION BY MR. GOUDGE:

Q Two questions, Mr. Owen.
Is it your understanding that this line was built under
a lease?

A It's my understanding
it's a lease and they're paying an annual rental.

Q And are you familiar
with whether a mine built under a lease is subject to
the Land Use Regulations or not?

A No sir, I am not, I
assume it is, but I am not---

Q You don't know the
answer to the question?

A No sir.

Q Now you showed us a
slide concerning the right of way, as it reached the
top of the Kotaneelee Bluff and it appeared to me that
the right-of-way or the cleared portion was wider than
80 feet. is that what the slide should indicate?

A Yes sir. Now, we
-- there was a problem there, Westcoast did not have
any test borings at the Kotaneelee slope. The nearest
they had actually no idea what that material was. They
had a hole about 2,000 feet south and they had one on
the north side of the Kotaneelee about five to six hun-
dred feet which would be roughly half a mile.

1 Q What was the width of
2 clearing required at the top of the Kotaneelee Bluff,
3 do you have an estimate of that?

4 A No sir, I do not know.
5 Westcoast were trying to keep within 80 feet but when
6 they got into that cut, they had to go wider to get
7 the grade to their slopes.

8 Q Could you give us an
9 approximate figure for how much wider?

10 A Well they were 100 feet
11 at least. Now, I --

12 Q That was 100 feet in
13 width.

14 A At the top. But they
15 were within the limits. they were permitted to go
16 100 feet. Now if they were to cut down or flatten out
17 their slopes, they were going to go beyond the 100
18 feet. Mr. Yumauchi and I were sitting in the truck at the
19 bottom of that slope looking up at it, and it was quite
20 obvious to get any sort of a cut, a decent slope. we
21 had to go to more than what the, I think Marine had
22 figured would be a two to one. So we phoned up, sitting
23 in Yumauchi's truck with his telephone, we phoned up
24 Vancouver and Mr. Yumauchi talked to an engineer there,
25 a design engineer, and in turn this chap, if I recall
26 correctly, phoned the Westcoast consultant, he phoned
27 back and it was decided that they would try to flatten
28 those slopes some more. I described to Mr. Yumauchi
29 who repeated on the phone what the material was. because
30 Westcoast at that time, they hadn't done any borings in

1 that area, this is what intrigues me. Their borings
2 were along the half mile centres, that's all they did.
3 They didn't try to' -- usually in a geological investi-
4 gation, test borings are put down to get the most
5 information you can, but there was nothing done along
6 that line.

7 MR. GOUDGE: Thank you very
8 much sir, those are all the questions I have.

9 THE COMMISSIONER: Well thank
10 you very much, Mr. Owen, for coming in.

11 MR. OWEN: Thank you sir.

12 THE COMMISSIONER: And sharing
13 your experience on the Pointed Mountain Line with us,
14 we appreciate it very much.

15 MR. OWEN: Thank you sir.

16 (WITNESS ASIDE)

17 MR. GOUDGE: Mr. Commissioner,
18 I wonder if we could just take a short break while we
19 set up the slides for the next witness. It will only
20 take a couple of minutes.

21 THE COMMISSIONER: Yes.

22 (PROCEEDINGS ADJOURNED)

23 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

24 D. LONGLITZ: Sworn

24 MR. GOUDGE: WE have two more
25 witnesses to present to the inquiry this morning. Mr.
26 Longlitz, who has just been sworn and Dr. Lewis who will
27 be appearing later this morning. Both of them have their
28 evidence in full and I think everyone has copies except
29 perhaps you sir and I'll hand one up in a moment. The
30 copies were recently arrived and some of my associates at

1 the tables have expressed themselves to me that in that
2 connection, they prefer to leave their cross-examination
3 of both witnesses until we resume next time on
4 October 14. I may sir, that I can't object too strenuously
5 to that because in fact the summaries we provided earlier
6 on were not as full as they might have been and I
7 think it's perhaps fair that they hear the evidence in
8 chief and have the documentation before they are
9 required to cross-examine.

10 DIRECT EXAMINATION BY MR. GOUDGE:

11 Q Now, Mr. Longlitz, your
12 present position, as I understand it, is the head of
13 the Land Use Section, Water, Lands Forest, and
14 Environment here in Yellowknife, is that correct?

15 A That's right.

16 Q And by what government
17 are you employed?

18 A The Federal Government.

19 Q The federal government,
20 and in what department?

21 A Indian Affairs and
22 Northern Development.

23 Q Yes, and you're appearing
24 today in your personal capacity and not as a policy
25 spokesman for the government?

26 A That is true.

27 Q Yes, now I have sir, and
28 I propose to table, with the inquiry a statement
29 which the Department has had prepared to be used by
30 civil servants appearing as witnesses before the Berger

1 Inquiry. YOU've read it and I take it your evidence is
2 given in light of the statement, it simply says that
3 -- well perhaps I should read it sir. I think that's
4 the preferable thing and I'll read it into the record
5 and we can file it. The statement goes as follows:

6 "Before giving any oral
7 testimony, I would like the permission of the Commissioner
8 to make a short statement.

9 When I was advised that I might
10 be called as a witness before this Inquiry to give
11 evidence in respect of matters that touch or concern my
12 daily work as a civil servant, I spoke to my superiors
13 about the matters and my superiors have advised me that
14 the policy of the government is that I am free to testify
15 and give evidence as to any facts within my knowledge,
16 that fall within my field of competence unless I have
17 been notified that a Minister of the Crown has
18 specifically requested that they be withheld on the
19 grounds of Crown privilege or certain facts given in
20 confidence by private parties to me in my role as a
21 civil servant, which it would be inappropriate or
22 injurious to reveal in public, or in respect of any
23 advice or opinions which I might in fact have given to
24 my Minister, or superiors.

25 Furthermore, I am free to
26 give evidence as to the carrying out of various duties
27 which the Department has assigned to me and also as to
28 the manner in which any particular policies, regulations
29 or statutes in respect of which I have personal knowledge
30 and which in fact are administered on a day to day basis

1 by myself, or persons working under me are implemented.
2 Although the policy of the federal government is that,
3 to the extent sought or requested, I am free to express
4 my personal opinion based on my experience or special
5 knowledge of the subject I would like it to be clearly
6 understood that any such opinions which might be
7 expressed by me in response to any questions asked are
8 entirely my personal views and in no way do they
9 represent the views of my department, my Minister or
10 the Federal Government. Any views or opinions which
11 I might be asked to express can at most, only represent
12 the views which I might have tendered to my Minister or
13 to any other person had I been asked about them.

14 I have been instructed by my
15 superiors to request from the Commission the right to
16 decline to answer any questions, seeking to ascertain
17 any specific advice which I or any other civil servant
18 might have expressed to a Minister or the government
19 and also to ask permission of the Commission to decline
20 to respond to any questions directed to ascertaining the
21 policy of the Department or the Federal Government.
22 In the event that the commission feels that such questions
23 are relevant and should be answered, I would request an
24 opportunity of first being able to consult with my
25 superiors before answering the question so that they could
26 decide whether the Attorney General should be consulted
27 with the view that counsel could be instructed to make the
28 appropriate and proper representations to the Commission
29 in respect of the questions objected to."

30 That sir, is not prepared by

1 you but by the department in consultation with the
2 Department of Justice, but I take it you've read it and
3 you're aware of it and I propose to file it with you,
4 Mr. Commissioner.

5 THE COMMISSIONER: It will
6 be marked as an exhibit, and I will take it sir, that
7 you adopt what is said there and we will proceed on the
8 basis as if you had read it yourself, and if any other
9 public servants wish to refer to that statement, as
10 we go along, we can allow them to do so without perhaps
11 having to re-read it in full on each occasion.

12 (STATEMENT TO BE USED BY CIVIL SERVANTS MARKED AS
13 EXHIBIT 272)

14 MR. GOUDGE: I hope that can
15 be done sir.

16 THE COMMISSIONER: I'm sure it
17 can.

18 MR. GOUDGE:

19 Q Mr. Longlitz, you received
20 your Senior Matriculation in Saskatchewan in 1961, am
21 I correct in that?
22
23
24
25
26
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30

1 A Yes, that is true.

2 Q And you are a graduate
3 of the Diploma Course in Accounting and BUiness
4 Administration from the Saskatchewan Institute of
5 Technology in 1964?

6 A Yes.

7 Q And your professional ex-
8 perience consisted from 1964 to 1971 of working with the
9 Government of Saskatchewan, primarily with the Conser-
10 vation and Development Branch of the Department of
11 Agriculture and with the Saskatchewan Water Supply
12 Board, is that so?

13 A Yes.

14 Q And then from 1971 to the
15 present, you have been with the Northern Economic
16 Development Branch of the Department of Indian Affairs
17 and Northern Development, is that correct?

18 A Yes.

19 Q And in that connection
20 you've held since 1971 in the following positions:
21 In 1971, Chief Land Use Inspector; in 1972 Land Use
22 Coordinator; in 1973, Acting Regional Superintendent,
23 Northwest Lands and Forest Service; in 1973 as well
24 Acting District Superintendent Inuvik District, North-
25 west Lands and Forest Service; and in 1975, Acting
26 Land Use Administrator, Northwest Lands and Forest
27 Service. Is that correct?

28 A Yes, that's true and now
29 it's no longer acting in the others you have mentioned.

30 Q You have now been confirmed

1 as Land Use Administrator in Northwest Lands and Forest
2 Service?

3 A No, with Water, Forests,
4 Lands and Environment.

5 Q I see, and could you tell
6 us briefly, sir the nature of your present function?

7 A I am now the engineer
8 under the Territorial Land Use Regulations, which issues
9 permits for land use operations in the Northwest
10 Territories, and more or less direct the land use pro-
11 gram, under the Water, Lands, Forest and Environment.

12 Q Now Mr. Longlitz, turning
13 to your evidence, of what relevance do you think that
14 your experience may be to this Inquiry?

15 A Well some aspects of the
16 various land use operations for which we issue permits
17 are similar to phases of pipeline construction. I am
18 thinking specifically of temporary access roads, the
19 clearing and disposal of brush and timber, temporary
20 stream crossings and the commencement and shutdown of
21 winter land use operations. I will also talk about over-
22 land travel when the active layer is thawed. I am going
23 to discuss some examples of our experience with these
24 types of operations using a series of photographic
25 slides, and these slides have been taken mainly by the
26 land use inspectors during the course of their work and
27 illustrate both acceptable land use operations and some
28 of the problems that we have encountered.

29 I would like to begin with the
30 temporary winter access roads, and one important

1 consideration in minimizing the impact of these access
2 roads is pre-planning. Though there is some input from
3 the government departments when the land use applicat-
4 ion is reviewed, the primary responsibility for plan-
5 ning falls upon the land use applicant, in consultation
6 with our local land use inspector. The applicant is
7 expected to pick a route that avoids topographic
8 obstacles and areas sensitive to disturbance, such as
9 low-lying wet terrain and steeper slopes. He is required
10 at all times to minimize the impact.

11 One land use permit clause
12 which is very important in preventing disturbance requires
13 that the ground surface be able to support traffic at
14 all times.

15 Assuming that most of the access
16 required during pipeline construction will be during the
17 winter, the following slides will illustrate what we
18 consider to be acceptable operations.

19 Here you have a winter road
20 that was repaired. You will note here that there is
21 quite a bit of snow compaction along here, to prevent
22 any disturbance to the vegetative mat, and the surface
23 of it. It's a means of putting the snow down and
24 packing it down, which is the equivalent to travelling
25 along the route.

26 Okay, well here you have an
27 access trail that has been prepared. It's been
28 prepared by compaction of snow, the snow has been rolled
29 in onto the line and then packed down with
30 equipment, and you end up with minimal disturbance to

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In Chief

1 the vegetative mat here by walking on a snow surface.

2 Here is one that is taken on
3 more or less the treeless area, and you can see again
4 the compacted snow road down the middle here. Again,
5 there is no problem with damaging the vegetative mat
6 because you are walking on a packed snow surface.

7 Q Next, Mr. Longlitz, what
8 difficulties could occur that would result in unaccept-
9 able operations?

10 A The difficulties we have
11 encountered have resulted from inadequate pre-planning
12 and operators' inexperience or negligence and unforeseen
13 difficulties such as very heavy and early snowfall,
14 delaying the frost penetration.

15 This particular slide here,
16 here is your main access line this way, and you will note
17 here another access line coming off and going up. This
18 particular access was created to determine granular
19 material deposits, one here and one here. It is my
20 feeling that if the access road had been constructed
21 through this area here, much closer, rather than this
22 long route around this way, you would have less distur-
23 bance to the vegetation, and the ground conditions.
24 The result here, of course you are looking at two
25 sources here, and then you would have access, one
26 access coming down this way out much closer haul road
27 and everything.

28 This is another access route
29 and you will note that there are routes off here,
30 around here, down along here and around. This is again

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1 a lack of preplanning in aerial reconnaissance prior to
2 constructing it, and there would not have been the neces-
3 sity to run off this way or this way, and you could have
4 prevented maybe an access too close to the water body
5 here which could end up in erosion problems in later
6 years. So if it is planned properly by air reconnaiss-
7 ance, you have got one track through and they would have
8 known where they were going.

9 Another example here, you will
10 note that when the line was first build, in avoiding
11 terrain obstacles, they tried to go up this way, found
12 out that it was an impossible passage, so they ended up
13 having to go this way anyway. This could have been
14 avoided had they did a little pre-scouting in advance,
15 and come around the side and had a normal pattern here
16 and left this undisturbed.

17 Again here, you will see where
18 you have an access road cut very close, and this is a
19 water body down in here, very close to the body and as
20 a result, you could end up with erosion into the water
21 body itself causing siltation.

22 This particular slide shows a
23 fairly steep slope coming down, and you have a removal
24 of the vegetative mat here, and causing the end result
25 of course is erosion down the side here. A little more
26 pre-planning and experience would have prevented removal
27 of the mat and you would not end up with the erosion
28 there.

29 Here is a further example of
30 attempts by an operator to try and gain access to this

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1 particular line up at the top here, not travelling back
2 to the one approved, he attempted to get up over top and
3 this is highly unacceptable, and in the next slide
4 there is a close-up of the particular area. You can
5 see where he spun out when he got to the top here, he
6 was not able to get over the top, spun out and this of
7 course ends up with removal of the vegetative mat, plus
8 the soil and everything, he will end up possibly with
9 erosion. This is the lake or river body here.

10 And this one here could be
11 termed as negligence on the part of the operator. He
12 was coming down a well travelled road and for some
13 reason he decided to go off, cut a nice little loop and
14 go around this way and come back up and then across
15 the road and down the other side.

16 Q What Mr. Genest refers
17 to as a frolic of his own.

18 A This again, I should
19 really start out first by explaining what this is.
20 This is an air strip that was prepared in the winter
21 for seismic, it allowed access to the camp which was
22 located in here. This here is the seismic line coming
23 across here, and again you'll note the extra access
24 routes that were coming back to camp. The fellow
25 either got hungry and decided to come in early, and
26 cut across when the normal route would have been coming
27 down this way, and it points out the tough problem in
28 supervision of your employees, especially when you have
29 got a number of vehicles attached to your program.

30 Q Next, Mr. Longlitz, you

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1 haven't mentioned construction techniques. Is this of
2 concern?

3 A Yes, once the access
4 route has been planned and is in the process of being
5 built, one of the most important aspects is proper
6 clearing and disposal of timber and brush. Machine
7 clearing, with the exception of the Mackenzie Highway
8 where hand clearing is required, is most common.

9 Firstly, in preparation of
10 lands, routes and access lands and this, you will note
11 that -- or you have probably heard the mention of mush-
12 room shoes. This here dish across the bottom with the
13 stem coming up is a mushroom shoe. It can be extended
14 down by the pin which is not shown here, but this shoe
15 can be extended down upwards into 14, 16 inches below
16 the blade of the cat, and allows this to more or less
17 slide along the surface and does not allow the blade to
18 dig in. This will, of course, minimize surface distur-
19 bance.

20 You have here also, you will
21 note, these machines were stored for the summer and they
22 are stored on a wooden platform to prevent sinking into
23 the surface area.

24 And here you can see two
25 crawler tractors which are clearing the line.
26 They have incorporated the use of the shoe here, and
27 what is basically happening behind is the small trees
28 are being snapped off and just left to lie flat on the
29 ground, and of course then you are not removing the
30 vegetative mat, and probably won't have any erosion.

1 Is that in focus for you? It
2 looks a little blurry to me, I guess I'm close.

3 Down in the centre here, is
4 another type, in a little heavier timber. You can see
5 where it looks relatively clear of brush on both sides.
6 What has happened here is the debris has been windrowed
7 down the middle and then access provided on top of that
8 material. This will of course -- you are travelling
9 away from the surface vegetation again and you are
10 travelling on top of a compacted layer of material,
11 compacting it and at the same time providing access
12 which again gives you minimal disturbance.

1 And here's a close up
2 of a line to kind of give you an indication of the minimal
3 disturbance to the surface area, with the material lying
4 flat on the ground here, which will deteriorate much
5 faster.

6 This is another site that
7 uses a snow packed area in the wintertime, and following
8 that you come out with, you can see here, it's a
9 different type of soil, but you have here revegetation
10 coming through, all along this area. This is the
11 previous area, but there was a good series of snow
12 packing on this road -- or on this area in the winter
13 time and as a result, there was minimal disturbance
14 and you're coming back with revegetation.

15 This gives you an example of
16 where you've removed the vegetative mat, in fact, it's
17 all laying on the side here and this kind of a situation
18 will get you into problems. You can end up with
19 erosion if you're in permafrost areas, degradation
20 of permafrost of course in areas of this type too.

21 In blading, you can blade away
22 an area and end up with uncovering an ice lens. This
23 particular line along here and down to here, this area
24 in here is an ice lens and if you should open that up
25 of course, it will melt out and the end result that
26 can happen from that, is a mud slide and you'll see here
27 where the area, the surface mat has been removed, and
28 the tree cover has been removed as well and the end result
29 was a mud slide coming down.

30 Here is another example, where

1 the surface mat has been removed as well, you'll see it
2 more or less piled along the sides here and what you get
3 is permafrost degradation by/^aslumping action in here.
4 You'll also note that there's no slope to this here
5 at all so therefore, it has remained stable to a degree,
6 you've only had a settling down, rather than a runoff
7 situation.

8
9 Here is again a cleared line
10 with the use of shoes, in the wintertime and you'll
11 note the hummocks have been removed. even the use of
12 shoes, you're still going to remove some hummocks and
13 there's going to be some disturbance. You'll note here
14 these dark spots are representative of the hummocks being
15 removed and it's, I would say probably in my opinion,
16 the average disturbance here, it's borderline.

17 Here's another shot of it.
18 You can see where the hummocks have been removed, and
19 it's more or less an extra shot of that last one.

20 Here is what it looks like
21 the following summer, you'll note that there doesn't
22 appear to be any problems as far as disturbance to the
23 -- like I'm thinking mainly of erosion problems. anything
24 along this line, but you can definitely see some of the
25 hummocks that have been removed off.

26 This is a classic example here
27 of removal of the surface layer, the vegetative mat and
28 probably into some of the mineral soil, and what you
29 end up with, you can see coming down the side here, this
30 has created a real erosion pattern all the way down,
and then along side it, you will also see another access

1 which was properly constructed and the vegetative mat
2 was partially removed but not all the way removed and
3 therefore you can see the lighter green in here is
4 revegetation, so if done properly, there's quite a
5 contrast there and it points it out. Here is more of
6 a close up, again you can see the revegetation coming
7 through in the new line and the old line of course, is
8 a drainage pattern.

9 Q Mr. Longlitz, you've
10 mentioned that hand clearing is required for the
11 Mackenzie Highway, could you explain that method of
12 clearing for us please?

13 A Yes, as you can here,
14 you've got -- there's small little stumps hanging up,
15 or sticking up, these were hand cleared in the winter
16 time and the height is more or less determined by the
17 snow cover at that time, they were chopped off just
18 where the snow comes. You have a certain amount of
19 stumps sticking up. However with snow pack, you can go
20 down this road, this particular line was a geotechnical
21 investigation, therefore it's fairly narrow. It's a
22 fairly light stand of timber, and they were able to
23 handpile it along the side here in a neat windrow and
24 this is what it looks like in the summertime. but it
25 did allow them access through there and of course,
26 minimum disturbance to the ground surface here.

27 Here is a cleared-- a
28 completely cleared area, it was hand cleared as well,
29 and you'll note that there is some vegetation coming
30 back in, it was a fairly heavy stand, therefore there

1 wasn't much vegetation there and the timber has been
2 removed off it.

3 Here is another example of
4 a cleared line, and you'll note the heights of the
5 stumps, this wasn't really what we prefer in hand
6 clearing, we like it possibly a little lower. This
7 can give you a lot of trouble. You need a lot of snow
8 to get in there and pack down so you can get in there
9 in the wintertime to get over that access.

10 Also the piling was not done,
11 it hasn't been completed yet on this particular section.

12 Q Does hand clearing have
13 any superiority in terms of minimizing surface
14 disturbance as opposed to machine clearing?

15 A Yes, as you can see.
16 here, surface disturbance tends to be less when hand
17 clearing is used and we feel that this is important on
18 slopes and valley walls for disruption of organic
19 layer could lead to a mechanical water erosion of
20 permafrost degradation. You can see in this slide
21 here that there has been very little disturbance, here
22 is your stump in the middle, that has been cut off and
23 you can see that it doesn't seem to have affected the
24 vegetative layer at all.

25 Q What is the method of
26 disposal for timber and brush that has been cleared from
27 the access routes?

28 A The acceptable method of
29 timber disposal and brush disposal include lopping and
30 scattering, the leveling and crushing, wind rowing and then

1 of course, total disposal. In this particular slide
2 there is a little contrast here. The operator was
3 asked, to do lop and scattering, well his method of
4 lop and scattering was to cut it in neat little piles and
5 pile it around, and pile all the limbs and that in
6 another pile. That isn't the intent. The idea is of
7 course is to scatter these over the line. getting them
8 close to the vegetative mat and the ground surface,
9 because they will deteriorate much faster and this is
10 not the idea is to pile them on the sides this only
11 creates a fire hazard.

12 Here is another one where
13 you're again in fairly light timber, the cats here have
14 walked down the line and knocked everything over and
15 then squashed it flat into the line. This is also an
16 acceptable method because it does again get the timber
17 down flat on the line, and you're not -- you're snapping
18 off most of the trees rather than tearing them out by
19 the roots and you're minimizing this disturbance to the
20 vegetative layer.

21 This particular area here
22 was cleared off to the side for the operation and then
23 at the end was brought back on over the line and in
24 effect, what has happened, is it's -- in rolling it a
25 number of times it has broken everything up into small
26 fragments and then of course, walking it down, it makes
27 for a good clean operation in that sense.

28 Here you have an example of
29 the windrowed line, this is machine windrowed and you
30 can see here the windrow down, these are all windrows,

1 and you'll also note that the breaks that are required
2 in the windrows, these are for fire protection and also
3 for wildlife to allow them access through, but this is
4 an acceptable method. You'll also note the heavy snow
5 fall in there, that they've been able to maintain on
6 that line to prevent surface vegetation disturbance.

7 This is an old method that
8 was used sometime back and it's called a pushout.
9 It was a normal procedure in the past to get rid of
10 timber, just push it off into the trees and leave it.
11 That's not acceptable by any means.

12 Here you see a unit and
13 there are no mushroom shoes on this one, this is a brush
14 rake and it's used for gathering the brush together
15 into a pile for disposal. I'd like to show you this
16 as it kind of represents the other type of vehicles that
17 are required on this and the next slide will show you
18 what it can do and if it's handled properly, and a
19 good operator on it, you'll note that there doesn't
20 appear here at all in the snow to be much disturbance
21 to the surface. He has been able to keep that blade
22 up and gather the debris together into neat piles all
23 the way along for further burning. There's another
24 thing you might note here, is that the machine in
25 moving down has made a very gradual turn here, rather
26 than skidding one track around to turn, he has been
27 able to make a gradual turn to pile these in.

28 Here you'll see now the
29 burning of the timber, it's burnt on the grubbing
30 area to prevent any further disturbance. This area of

1 course may be used in the road construction itself,
2 but it's burnt on the side here in the grubbing area
3 to prevent disturbance to areas over on this side.

4 Here you can see now the
5 burning, where it has taken place and this is burning
6 on a vegetative mat and what can happen here, you can
7 see that the vegetative mat has been burned off and if
8 you're in a permafrost area, you will come up with some
9 permafrost degradation because here is a ponding situation
10 where there's permafrost degradation taking place.

11 Q Now, Mr. Longlitz, you've
12 illustrated route preparation in timbered areas, what
13 is required in those areas where there is little or no
14 tree cover?

15 A In those areas we are
16 concerned that surface disturbance be kept to a minimum.
17 This requires, as mentioned previously, avoidance where
18 possible of such terrain features as low wet areas
19 patterned ground and steep slopes. Also it requires that
20 bulldozers have their blades equipped with the mushroom
21 shoe.

22 Here's an example of a snow
23 packed road, again and what they have done here is
24 gathered snow in from the sides, brought it up,
25 they've gathered the snow from the sides, brought it
26 into the middle and then run down the centre and compacted
27 it and then as you see, that makes a pretty fair road
28 to travel on.

29 This is a further example of
30 a route that was prepared, there is two routes here, one

1 of previous years that runs down through this way across
2 here, this darker green, there has been some permafrost
3 degradation in there, and it's this ponding of water
4 is an example of that, and crossing it then, you have
5 another access, which was constructed with the packing
6 of snow, you get a certain amount of discolouration,
7 which you will note across is the same pattern ground
8 area and there is little or no disturbance on this
9 particular section so there's a variance there.

10 Q Mr. Longlitz, are there
11 any other aspects of route preparation that are important?

12 A Yes temporary stream
13 crossings are given special consideration, both in
14 terms of bank stability and the protection of the stream
15 environment. We rely upon consultation with the
16 Fisheries and Marine Service, Department of the Environ-
17 ment who have special interest in these crossings under
18 Section 33 of the Fisheries Act. It is important that the
19 crossings structures do not interfere with either the
20 winter or summer water flow.

21 The following are illustrations
22 from the more acceptable temporary stream crossings.
23
24
25
26
27
28
29
30

1 Here is the use of a Bailey
2 bridge, two cross-streams, you will note the structure
3 itself was set up. In setting something like this up,
4 you're getting away from disturbance to the stream at all.

5 All the traffic
6 is up above. A major degree of work in that.

7 Here is a smaller one. You
8 will note here the laying of limb trees across here,
9 allowing also a flow pattern underneath, and then you
10 have a series of smaller logs cross-patterned on this
11 thing. This is fairly acceptable, except at the same
12 time we don't like the dirt fill they put on the top,
13 because in removing that you are going to have a little
14 problem keeping the dirt out of the stream, so it's a
15 matter of a snow pack on top of there rather than dirt
16 fill.

17 Here you have an example of
18 crossing a stream and the use of snow fill to allow
19 access down these slopes. They are very steep slopes,
20 it doesn't really, it's not pictured out here too
21 well, but there are very steep slopes here and they have
22 gathered snow together from the surrounding area and
23 put it in here to allow for access down across this body
24 and up the other side. It prevents disturbance to your
25 stream banks by using a snow fill on either side.

26 This is a further picture of
27 it from a different angle. It gives you another idea
28 of how much snow had to be gathered to put in here to
29 get enough snow in here to fill in these hollows so
30 you could have access with machines.

1 And of course you can go one
2 extreme on that, and you can manage to scrape all the
3 surface area off in gathering the snow.
4 You might have been okay here but you would fail at this
5 end of it. And then of course you can try and use a
6 brush fill which is not acceptable either and will have
7 to be removed if you put it in, right away, because it
8 is not acceptable. This tends to plug off the stream
9 and cause all kinds of damming effects, et cetera.

10 And the other avenue is to
11 cut the bank down. Well if you cut the bank down, then
12 of course you are into erosion problems here and here,
13 coming in, plus siltation into the river. And the use
14 of a dirt fill here coming across in this way, again
15 the dirt fill is in here. In this particular case, you
16 can see where the flooding of the water, or the spring
17 break-off -- breakup is hitting and it's being backed
18 up to a degree. In this particular case it would not
19 flood the sides and go over the top, but at the same
20 time it gives you an indication of the possible erosion
21 problems you could have here, and the siltation to the
22 river.

23 Q Mr. Longlitz, you have
24 outlined these selection of access routes and their preparation.
25 Is consideration given to the actual timing of preparation
26 and the use of these roads?

27 A Yes.

28 Q Could you explain these
29 considerations?

30 A Before we allow a land

D. Longlitz
In Chief

1 use operation that requires overland travel to begin, we
2 take into account many factors, the main one being the
3 ability of the ground surface to support the movement
4 of vehicles without terrain disturbance. You can appre-
5 ciate that this is not always easy to determine. As a
6 rule of thumb, the depth of frost is determined in those
7 areas likely to freeze most slowly. For example, a
8 low wet area will freeze more slowly than a higher dry
9 site. Snow cover is also important. A minimum depth
10 is required to protect the ground surface, however, a
11 heavy early snowfall may delay frost penetration.

12 Although industry may propose
13 tentative starting dates to aid them in their planning,
14 actual starting dates for land use operations are deter-
15 mined following inspection by field personnel.

16 Though we have a large degree
17 of control over the start of land use operations in the
18 fall and industry itself encounters difficulties if
19 activities are begun before the active layer is suffi-
20 ciently frozen, we have more difficulty in determining
21 shut-down dates in the spring.

22 Several factors are important.
23 It is possible for an operator to continue his land use
24 activity, even though the surface may be thawed because
25 there is a solid base. This is complicated by the fact
26 that the main thaw is not uniform throughout the area,
27 or throughout the day. There is a temptation for
28 operators, when confronted with this situation, to want
29 to continue work, especially when they may have only a
30 small portion of their program left to complete.

1 Q Are tentative shut-down
2 dates given to industry?

3 A Yes, I think for example,
4 rough dates that we have set in the past, we've had in
5 Inuvik an April 30th date; Norman Wells it was April
6 15th date, and down to Fort Simpson around April the 8th.
7 Again shut-down dates are modified by field inspection,
8 and usually subject to review over a 48 hour period.

9 The following slides can illus-
10 trate what can happen if a land use operation continues
11 too late in the spring.

12 This is an example here where
13 it was getting to the point where the access road was
14 being -- getting to be used too late in the spring. You
15 can see the dark tracks created by the vehicle coming
16 down this route. It gives you a kind of an example
17 that where you travel on a line, you're bound to get
18 snow melt earlier than you are if you don't travel.
19 Like the snow, there is good cover here, pretty well
20 right up here, a little starting to deteriorate here,
21 but where the traffic is going to go, it has deterior-
22 ated.

23 Here is another example where
24 a spring shut-down has been declared, and you will note
25 there is no rutting here on this particular line in
26 here. You can see that the traffic was stopped, and
27 it also gives you that further example of where you
28 don't travel, the snow tends to stay a little longer,
29 and therefore it gives you another indication that you
30 have to shut down early.

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1 This is a further slide of the
2 same area, and points out a little more clearly why a
3 spring shut-down is prior, in advance type of thing,
4 because you have the cross blocks put in here -- ditch-
5 ing across, to channel water off into the vegetative
6 mat on the side and prevent erosion coming down the
7 central area. This all has to be done prior to spring
8 break-up, or else you get into some serious problems
9 there.

10 And if you don't, of course,
11 there is the other result, you can get a picture of it.
12 Here you have to keep moving when you get into one
13 area and it gets so soft, you can't travel, they have
14 to move to another area, another area and back over this
15 way. That's what the end result would be in a non-timber
16 area.

17 And of course, travelling late
18 in the spring again in a heavy timbered area, you can
19 also end up with rutting of this nature which of course
20 is subject to erosion if there's slopes and that
21 involved.

22 And as you can see here, fur-
23 ther coming around the corner trying to navigate some
24 wet areas, it gives you quite a problem.

25 Q I take it, Mr. Longlitz,
26 just to interpose a question, that the tentative shut-
27 down dates are given to industries sometime early in
28 the winter season?

29 A Yes, they are given some-
30 time earlier on, and as I say, they are tentative for

1 planning purposes mainly, and then from beyond that
2 point, we go into a 48 hour deal and usually give them
3 48 hours to get shut down.

4 Q Yes. So far as you have
5 discussed then, winter operations only, are there circum-
6 stances where overland travel occurs in the summer?

7 A Yes, but summer operations
8 produce an entirely different set of problems, and in
9 most cases we try to discourage this type of activity.

10 Q Can you outline some of
11 the problems that have occurred as the result of summer
12 overland travel?

13 A I think that these follow-
14 ing slides will illustrate that.

15 What we have here is -- you
16 have here varying types of terrain. You have a higher,
17 dryer type up near the top here. You are coming down a
18 little lower and then it starts to get wet and then you
19 get right down into a boggy area here on this parti-
20 cular slide.

21 And here it shows you travel
22 of a crawler tractor, for instance, on a high, dry
23 site. It's very hard to pick out but the track does
24 run up through this way and it shows you minimal disturb-
25 ance here, and shows that access can be gone over in
26 the summer time in certain areas.

27 Again it's not too evident
28 here but the vehicle has travelled down this route here,
29 and again very minimal disturbance to the area.

30 Here it gives you an example

1 of where the track has skidded and torn off a situation
2 of the vegetative mat here. This, there is a way to
3 resolve that problem and that's coming out and hand
4 placing the material back on the area, or levelling it
5 off.

6 And then, of course, there is
7 always the problem of getting into wet areas and you
8 can see where there is the beginning of rutting, and
9 down through a small ponding area in here where it is
10 real wet, and you can start to see the Bowser or
11 where the surface is chewed up, and the mat destroyed,
12 which of course is subject to erosion then.

13 And the end result, of course.

14 There are also low ground
15 bearing pressure vehicles. The way that this is achieved
16 is by a very wide track here and here, to support the
17 weight of that vehicle. This particular unit is using
18 a special Browser bar here, called a D-dent. It concen-
19 trates the weight to a degree down in the centre area
20 here on both sides. You can see where that is. That
21 has a tendency to create some tracking in the vegetation
22 and that, but it is an example of going to a machine
23 that is a much lighter ground bearing pressure.

24 Here is three of the units
25 that are basically travelling in the summer time on
26 high and dry area. You can see here where they are
27 coming along. It's very hard to pick out their track
28 at all. There is a very faint line coming up through
29 here that you can see, but there is minimal disturbance
30 provided you are on high and dry ground.

1 Again here, our whole crew has
2 travelled over this particular knoll heading in that
3 direction, and there's very little evidence that they
4 have been in there at all. However, you can get into
5 areas where it is damp and wet, and you will end up with
6 a chewing-up of the surface, and again possible subject
7 to erosion.

8 Q Could you keep your voice
9 up please, Mr. Longlitz, I am having a little trouble
10 hearing you.

11 A And of course you can go
12 to the extreme and get into a real wet area and the use
13 of this particular machine which has pretty good dis-
14 placement of weight again on the track, but in wet areas
15 like such as this area here, it was impossible to navi-
16 gate through here, and of course ended up with a
17 rutting situation.

18 And then we also have the use
19 of other type vehicles which don't use a track but use
20 an air sack for displacing their weight, and they have
21 again a very low ground bank pressure. This slide
22 is representative of a number of things actually. You
23 have here a set of tracks going in and you have another
24 set coming back out. The set going in, the vehicle
25 was overloaded according to specifications. It also
26 had a faulty air sack on one side, allowing the dis-
27 placement of the weight, the ground bank pressure
28 to come up, and as you can see, it did end up falling
29 through in this particular area. And then you can
30 also see where it went back, dumped its load and came

1 back out, and you can barely see the tracks on this side
2 over here where it did come out, so it gives you an
3 indication of the proper use of the vehicle. Negligence,
4 inexperience of the operator again in this case was one
5 of the factors.

6 And of course this is another
7 path later on in which had to be restored, and you can
8 see what happened. We got into a real wet area, it's
9 a close-up actually, and that's just a general view to
10 end it off.

11 Q I think you have a few
12 remarks to conclude your evidence, Mr. Longlitz? .

13 A Yes. It should be
14 stressed that, though summer traffic may create little
15 disturbance on well drained sites, the sensitivity of
16 wet areas has been illustrated by these previous slides.

17 One is faced with the problem
18 of the variability of terrain over short distances and
19 unless summer overland movement of vehicles is closely
20 monitored, even low ground bearing pressure machinery,
21 such as rolligons, are capable of producing unacceptable
22 levels of disturbance.

23 With this slide presentation
24 which I have just given you, I hope that I have provided
25 you with some relevant information, based upon our
26 experience with land use operations in the north, which
27 might be applicable to the concerns of the Inquiry.

1 MR. GOUDGE: That includes
2 his evidence in chief then, subject to what you say
3 sir. Cross-examination, I think counsel would prefer
4 to defer until October 14.

5 THE COMMISSIONER: Well
6 certainly. If counsel don't wish to cross-examine Mr.
7 Longlitz today, that's perfectly all right. So I just
8 want to thank you Mr. Longlitz for coming today and
9 I certainly found the talk you gave and the slides very,
10 very helpful because they illustrate some of the problems
11 that we've been discussing and we'll have to ask you
12 to come back again on Tuesday, the 14th of October
13 when some of these gentlemen will have some questions
14 that I have no doubt will give you no difficulty whatever
15 but they want to go away and think about this for
16 awhile.

17 So thank you again sir.

18 MR. LONGLITZ: Thank you.

19 MR. GOUDGE: I wonder, Mr.
20 Commissioner, if we might take another five minutes,
21 we have another slide presentation to set up for our
22 last witness for today.

23 (PROCEEDINGS ADJOURNED)

24 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

25 C.P. LEWIS: Sworn

26 MR. GOUDGE: Mr. Commissioner
27 there are several more copies of Dr. Lewis'
28 evidence coming and it will be here momentarily. In
29 the meantime, Dr. Lewis, you're presently employed by
30 the Geological Survey of Canada?

A Yes, I'm a physical

C.P. Lewis
In Chief

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1 scientist, with the Terrain Sciences Division.

2 Q Yes and once again,
3 you're appearing today in your personal capacity
4 rather than as a policy spokesman for government?

5 A Yes.

6 Q You were educated first
7 at the University of Waterloo where you did a B.A.

8 A Yes.

9 Q And what was that in?

10 A That was in Geography.

11 Q And following that,
12 you obtained your M.A. and PhD working under Dr. Ross
13 McKay at the University of British Columbia, Department
14 of Geography?

15 A Yes I did.

16 Q When did you complete your
17 graduate work?

18 A This year.

19 Q And what was your
20 PHD work centred on?

21 A It was centred on a
22 geomorphic study of Mackenzie Delta plain lakes, with
23 particular respect to lake sedimentation and to the
24 processes which affect lake sedimentation.

25 Q Your professional
26 experience in 1965 and 1966, I take it you worked on
27 glaciology, river hydrology, in Baffin Island in the
28 Northwest Territories?

29 A Yes I did.

30 Q And would you continue please

1 with a brief elaboration of your professional experience?

2 A Well, my professional
3 experience, which is possibly more relevant to these
4 hearings, consists of my PhD thesis on the Mackenzie
5 Delta, and then in 1972 I went to the Terrain Sciences
6 Division and my first assignment there was to do a study
7 of modern river environments along the Yukon north
8 slope.

9 Then in 1973, I switched from
10 rivers to coasts and deltas and I worked along the
11 coast of the Tuktoyaktuk Peninsula and then in 1974,
12 back again to the Yukon coast, working primarily on
13 coastal processes, this time, and in 1975, we have
14 continued a project started in 1974, in the Kay Point
15 area, of the Yukon North Slope, the mouth of the
16 Babbage River and we're looking at coastal sub
17 environments and the processes which affect them, and
18 at the Babbage River Delta. This project will continue
19 in 1976.

20 Q Now if I could turn sir
21 to your prepared evidence and repeat very briefly as
22 it reads in the text, what's your present position with
23 the Geological Survey of Canada?

24 A I'm a physical
25 scientist with the Terrain Sciences Division and I have
26 been and am presently engaged in studies of the geo-
27 morphology of modern river and coastal environments in
28 Arctic areas.

29 Q What work experience have
30 you had in areas which would be affected by the proposed

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1 pipeline?

2 A My work experience, is
3 as I described it a few seconds ago.

4 Q In past testimony on
5 river crossings, a number of componenets of valley cross-
6 sections have been identified. Could you identify and
7 give your definitions of these components?

8 A We can identify four major
9 components; the valley wall, river terraces the valley
10 plain, and the active channel.

11 I'll give you my definitions
12 of each of these with the aid of slides of the Yukon
13 north slope river cross-sections.

14 Firstly these valley walls.
15 These separate the upland surface from the highest
16 river terraces. May I have the first slide please.
17 They can be very steep like this wall of the Blow
18 River almost at the proposed CAGSL crossing sites.
19 They are often the site of active mass movements, the
20 second slide please.

21 Q Perhaps you could just
22 pause for a moment and we can see if we can get the
23 lights dimmed.

24 A Somehow we missed the
25 second slide. However, the second slide, simply showed
26 a -- okay, that one's the second slide.

27 This shows what is known as
28 a ground ice slump along the banks of the Babbage River
29 somewhat downstream from the proposed CAGPL crossing
30 site, and it's an example of active mass movement on a

1 valley wall.

2 Now the second component of
3 a valley cross section are terraces or abandoned flood
4 plains or sometimes called inactive flood plains or
5 fossil flood plains there are a variety of names for
6 these things, and basically they were created when the
7 river channel was at a higher level than it is at
8 present. Could we have the third slide.

9 This slide shows a number of
10 terraces on the upper Blow Fiver, where the channel has
11 been entrenched into bedrock. The steep fronts of these
12 terraces are effectively segments of the valley wall
13 and as the valley wall are susceptible to mass movement
14 processes.

15 The third component is what
16 I call the valley plain, and it is basically the
17 lowest terrace level over the flood plain if one exists.
18 Now I should explain perhaps that terraces and flood
19 plains:

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Whether this lowest level is a terrace or a flood plain, depends to, hydraulic engineers at least, upon its frequency of inundation by water. On many rivers, the flood plain level will be exceeded by several floods each year, while a low terrace, on the other hand, will be flooded much less frequently, say for example, less often than the mean annual discharge which occurs every -- the mean annual flood which occurs every two to three years.

The fourth slide. This slide shows the valley plain of a reach on the Babbage River. It is very difficult to say whether it is a terrace or a flood plain, because we have very little information on the frequency of flooding. It could be either.

And the last component of a valley cross-section, is the active channel.

Now, as you know from previous witnesses here, people who study rivers attach a particular importance to what is known as the bankfull stage. This is the water level at which the river just begins to spread out over its flood plain, if there is a flood plain.

For example, if the water level on this slide rose up to the level where the man is standing and started to spread out over the plain, that level would be the bankfull stage. The water discharge at this bankfull stage is called the dominant or channel forming discharge.

The true dominance of this discharge, however, is a much debated point, but until

1 something better comes along, we have to live with it.

2 On gravel bed rivers, like those
3 of the Yukon north slope, the bankfull water level can
4 be very difficult to locate in the field because the
5 flood plain often is not a distinct feature. Rather,
6 it grades into the active channel and it does not pro-
7 vide an easily definable level.

8 In my work on Yukon north slope
9 rivers, I have defined bankfull stage as the average
10 level of the highest bar surfaces, whose primary plant
11 cover does not include shrubs. In other words, it can
12 be covered with grass or unvegetated, but it can't have
13 shrubs on it. The definition simply represents an
14 attempt to achieve some objectivity and its physical
15 meaning is uncertain.

16 All parts of the river valley
17 below the level of bankfull stage, make up what I call
18 the active channel, in that they are flooded often
19 enough to prevent the growth of perennial vegetation.

20 On this slide of the Firth
21 River at the proposed CAGSL crossing site, the entire
22 unvegetated area shown is the active channel, not just
23 that area which is covered with water at the time the
24 slide was taken, but the entire unvegetated area.

25 Q On pages 3128 and 29 of
26 the transcripts, Dr. Cooper was asked to discuss the
27 terms "alluvial terrace" and active flood plain". In
28 your opinion, do your definitions agree with his?

29 A Yes, they do. I believe
30 he also uses the term "inactive flood plain" to mean the

1 same as alluvial terrace.

2 Q Now in the "Responses
3 to Requests for Supplementary Information", question
4 39, the applicant CAGSL uses as a definition of "active
5 flood plain", "that area of the flood plain that ex-
6periences seasonal flooding", and is this definition
7 consistent with yours?

8 A No, I do not believe it is.
9 The term as used in the responses would include large
10 portions of what I would call the active channel, and
11 in the context in which CAGSL used the term "flood plain"
12 in question 39, it would include all parts of the active
13 channel above water, at the time of commencement of
14 borrow pit operations, and I say this is hardly a good
15 hydraulic or geomorphic definition.

16 Q In your studies, have you
17 discovered any characteristics of the longitudinal pro-
18files of Yukon north slope rivers which might affect a
19 pipeline crossing?

20 Before you answer, just to help
21 me, could you explain what a longitudinal profile of a
22 river is?

23 A Well we were talking about
24 cross-sections measured across valleys, we are now look-
25ing down the valleys, lengthwise, parallel to the
26 river.

27 Q Sorry. Could you then
28 go on with your answer?

29 A Well the present long
30 profiles of the north slope rivers are similar in form

1 to those of most rivers in the world.

2 During the late Pleistocene,
3 say 10 to 15,000 years ago, widespread entrenchment took
4 place as the rivers cut down to the much lower sea levels
5 of that time. Following that, however, sea level rose
6 as the ice melted and the river valleys infilled.

7 You can see evidence of the
8 incision on this slide of the proposed CAGSL Blow River
9 crossing site, but some seismic refraction work we did
10 here indicates 100 to 125 feet of gravel infilling since
11 the bed rock valley was created.

12 But all these changes are
13 geological in time scale and would not even be notice-
14 able over a 30 to 40 year time span that we are consider-
15 ing with respect to the pipeline. There is some evi-
16 dence, however, of slow present day degradation, that's
17 erosion, in response to coastal retreat, and/or to
18 decrease sediment supply, and/or tectonic uplift, but
19 again I don't think this would be of much importance
20 during the proposed life span of the pipeline.

21 Q A number of different
22 types of channel pattern, braided, meandering and so on,
23 have been mentioned in earlier testimony. What types
24 are found along the Yukon north slope?

25 A Channel patterns along
26 the Yukon north slope range from full meandering, like
27 this reach on the Babbage River a few miles upstream
28 from the proposed crossing site, to braided, like this
29 reach of the Firth River near its mouth.

30 Probably the most common type,

Q That's a misprint, I think.

Q So it's not a misprint.

Such rivers, as I said, are a cross between braided and meandering types, and as such, their hydraulic and geomorphic characteristics are somewhat more difficult to predict because they fall between types.

A Generally we are dealing with gravel, with some sand included, and usually the material size on any one river decreases in a downstream direction. Can I have the next slide, please?

For example, on the Blow River,

1 the average diameter decreases from over two inches on
2 this upstream reach, to about one inch in this reach
3 near the mouth. I think the change was obvious in the
4 slide.

5 One interesting thing is the
6 slide, the first slide shown probably looked like the
7 average size was much greater than two inches. It
8 shows how the eye tends to concentrate on large things.

9 The channel beds, when water
10 covered, are pure gravel, and are tightly packed and
11 form what we call a bed armour, and this armour is much
12 more resistant to scour than material size alone would
13 suggest. Beneath this surface layer, and in channel
14 bars, packing is much looser and considerably more sand
15 is included.

16 Now, the thickness of these
17 deposits is highly variable along any given river, and
18 among rivers. At some locations, as this slide of the
19 river bank at the proposed Babbage River crossing site
20 shows, bed rock is at or near the surface. In other
21 locations, the valley fill is quite thick.

22 I have already mentioned the
23 100 to 125 feet of fill at the Blow River crossing site,
24 and we have determined, again by seismic refraction
25 methods, that there is 40 to 60 feet of fill at the
26 Malcolm River crossing site.

27 To this point now, I have
28 mentioned only coarse material. Some fine deposits do
29 exist, however, primarily as a veneer over the valley
30 plain, be it flood plain or low terrace adjacent to the

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1 river channel.

2 These fine materials are ex-
3 posed in cut banks like this silty sand bank of the
4 lower Blow River. Most commonly, though, the banks are
5 more like this one on the lower Babbage River, with a
6 thin surface layer of organic-rich silt and sand under-
7 lain by gravel.

8 Q Now Dr. Lewis, the Yukon
9 north slope is entirely within the continuous permafrost
10 zone. What is known about permafrost conditions
11 beneath these rivers?

12 A Really not very much,
13 except that it exists.

14 The regional thickness of per-
15 mafrost is in excess of a thousand feet in this area,
16 and particularly since the north slope rivers freeze
17 to the bottom in most places in winter, permafrost
18 will exist, at some depth, beneath all of them.

19 During the open water season,
20 the heat from flowing water, we have measured water
21 temperatures in excess of 15 degrees Centigrade, that
22 would be about 59 Fahrenheit, will maintain an unfrozen
23 layer next to the channel. Almost no information
24 exists on the thickness which this unfrozen layer can
25 reach.

26 But we have some recent
27 geophysical information for the Malcolm River crossing
28 site, which suggests that it was unfrozen to a depth
29 of about 25 feet beneath the main low water channel
30 in August, 1974.

1 And further below, beneath
2 the unfrozen zone, the temperature regime will be
3 modified by the water even though it is still frozen.
4 We have no measurements of this for north slope rivers
5 but some evidence has been collected in Alaska.

6 Now as I have said, the north
7 slope rivers freeze to the bottom in winter, leading
8 to the development of a seasonally frozen layer beneath
9 the channel bed. Until this seasonal frost layer reaches
10 the permafrost table further down, if it does, ground
11 water can continue to flow. Because the river channel
12 sediments are so coarse there is unlikely to be much
13 segregated ice in the frozen sediments, either massive
14 or lenticular and neither have we seen much evidence of
15 excess ice in the river valley plain sediments which
16 bound the channel, locally a few examples, but not
17 generally throughout the coastal plain. All these comments
18 are generalizations. To my knowledge, there is no
19 detailed information of the distribution or geotechnical
20 properties of frozen ground, either seasonal or permanent
21 on the Yukon north slope rivers.

22 Q
23 Now that we have covered the
24 form of these rivers and the materials in which they
25 flow, could you tell us what is known about their
26 hydrologic characteristics, that is the amount of water
27 involved and the changes in flow during the year.

28 A Well again, there's
29 very little of a quantitative nature known, either about
30 the total annual discharge, of any of these rivers or
about its distribution throughout the year. Only one

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1 permanent gauging station exists on the north slope, that
2 on the first river not far above the proposed CAGPL
3 crossing site, and it has been in operation only since the
4 spring of 1972. Additionally, my own field parties have
5 been gauging the Babbage River and its tributary Deep
6 Creek at their mouths, for parts of the last two
7 summers. We also did spot discharge measurements at
8 a number of sites on most of the major north slope
9 rivers during the summer of 1972, this data is presented
10 in our 1973 reports to the Environmental
11 Social Committee Northern Pipelines, which I have a
12 copy here.

13 I think we do however, have
14 a reasonable grasp on the general nature of seasonal
15 changes and flow and on the factors which influence
16 these changes. The major yearly flow events are a snow
17 melt/induced spring flood followed by a general decline
18 with brief rises during summer rain storms. By October,
19 surface flow declines to a very low level, or ceases
20 all together, and during the winter, all the rivers
21 freeze solidly to the bottom, except for a few unfrozen
22 pockets on rivers like the Firth and Malcolm.

23 The most interesting and
24 possibly the most significant aspect of the hydrologic
25 regime to pipeline construction is the possibility of
26 occurrence at any time during the openwater season,
27 of rain storm floods. And these floods can exceed the
28 spring flood in magnitude and occur very quickly. In
29 August, 1974, a three day storm caused the Babbage River
30 to rise over four feet in 48 hours of which over three

1 feet occurred in the first 14 hours. In 1972, when
2 We took a boat down the lower 65 miles of the Babbage.
3 we went to bed one night, with the river looking like
4 the next slide, and when we woke up, the next morning,
5 with it looking like this slide. We had a great argument
6 the night before as to where we were going to pitch our
7 tent. Luckily the person in favour of the higher spot
8 won.

9 Q Now, Dr. Lewis given
10 this lack of data on river flow what is your opinion
11 of the methods used by CAGSL as given in the several volumes
12 of the "Reference Book of Water Crossings" to estimate so-
13 called "design flows" for pipeline construction?

14 A I think the methods used
15 by CAGSL, to estimate bankfull and extreme discharges are
16 among many which could have been used under the
17 circumstances.

18 I think their methods were as
19 good as any and probably more conservative than most.
20 particularly since we are concerned at this stage, only
21 with the preliminary estimates. In our 1973 report, we
22 gave estimates of bankfull discharge and of bankfull
23 channel characteristics based on actual field surveys
24 of reaches on north slope rivers. Several of which
25 later turned out to be proposed crossing sites. We
26 also estimated what CAGSL calls "Extreme Discharge"
27 for these reaches by two different methods.

28 When I compared CAGSL's
29 estimates as given in Volume III of the Reference Book
30 of Water Crossings, for Yukon north slope rivers, I found

1 that in almost every case their estimates of bankfull
2 discharge were considerably greater than our own, and
3 their estimates of extreme discharge were very similar
4 to those of the more conservative of the two methods
5 we applied. Now this is not to say that the values
6 given by CAGSL are in any way as reliable as they could
7 be, if many years of flow data existed for these rivers,
8 nor is it to say that their present estimates would
9 be adequate for final design when the peculiar nature
10 of gravel bed rivers, the effect of frozen bed and
11 banks and the possible influence of ice jamming on the
12 bankfull channel properties all would have to be taken
13 into consideration.

14 I intend only to say that
15 given the lack of hydrometric data, and the many years
16 required to obtain a sufficient quantity of that data,
17 for reliable analysis, and given the preliminary nature
18 of the estimates, CAGSL's are in my view generally
19 conservative, for the Yukon north slope rivers,
20 and therefore to me at least, acceptable.

21 Q What about the sediment
22 which these rivers carry? Is much known about that?

23 A Even less than is known
24 about river flow.

25 In gravel rivers like those
26 of the north slope, most of the sediment is bounced or
27 rolled along the channel bed as what is known as bed
28 load. No measurements of bedload transport exist for
29 this area.

30 In 1972 we did paint lines

1 like this one on the upper Blow River across a number of
2 channel bars. When we returned in 1973, little evidence
3 of the lines remained. At this particular site,
4 the painted grains we were able to locate had been
5 moved an average of 50 feet downstream, one of these
6 grains was 8.5 inches in diameter so the rivers do move
7 bedload, how much and how often is an unanswerable
8 question.

9 Finer sediments, silts and
10 sands is usually moved as what is called suspended load.
11 It's suspended in the water, except during spring flood
12 and summer storm floods, the north slope of the rivers
13 have very little suspended loads, they run essentially
14 clear. During floods, however, sediment concentrations
15 increase dramatically.

16 The concentration increased
17 from 59 to 2,225 parts of sediment per million parts of
18 water during the Babbage River storm flood, I showed
19 you slides of earlier, and we measured a concentration
20 of almost five thousand parts per million on the Firth
21 river during a very minor storm flood.

22 Although these storm floods
23 move considerable amounts of sediment, they are
24 usually very short lived and it appears from Alaskan
25 data at least, that as much as three quarters of the
26 total annual suspended load can be moved in the 20
27 days centred on spring break up.

28 However, this same spring flood
29 dominance may not be true for bedload transport.

30 The first flow on the north

1 slope rivers is over top of the previous winter's ice
2 and it usually occurs sometime in May.

3 This slide shows flow over
4 ice on the lower Babbage River and the next slide, shows
5 first flow in the Babbage River Delta. Here the water is
6 spreading out from the Babbage River Delta over top of
7 the Beaufort Sea ice.

8 Now the ice while it is on the
9 bed, and as I said most of these rivers are frozen right
10 to the bed, protects the bed from scour and thus, inhibits
11 bedload transport. Even after the ice is gone, the
12 frozen bed and banks are more resistant to scour than
13 they would be later in the summer. All of this tends to
14 reduce the effect which spring flood has on bed scour and
15 bank erosion.

16 Q Why is this important to
17 the CAGSL project?

18 A I think sediment transport
19 in general is important for several reasons. Firstly,
20 bedload material is material which is scoured from the
21 channel bed and banks and there has been a great deal of
22 discussion already about scour. It's quantity
23 nature and time of movement are therefore relevant to the
24 problem of how deep to bury the pipe beneath the river.
25 The depths of maximum scour for north slope rivers
26 produced by CAGSL are probably conservative again.
27 Because the bankfull depth values used appear to be con-
28 servative, this leads back to the discharge, and because,
29 as I said, the river may be at least partly protected from
30 scour by ice and frozen ground during spring flood.

1 But the methods which have
2 been applied by CAGSL are as were those used for
3 estimating bankfull stage, southern methods, and they may
4 or may not apply in any individual northern crossing
5 sites. Before final design, I would like to see some
6 actual measurements of scour holes in north slope rivers
7 made and related to bankfull characteristics. I'd like
8 to see a study of the influence of frozen banks on
9 river bed ~~does scour~~ it could cause an increase or a
10 decrease or does it have any effect at all. I'd
11 like to see some real evidence not my generalization,
12 that scour really is inhibited by ice and frozen ground
13 during spring flood.

14 Also, the role of direct ice
15 scour, and ice jamming needs to be examined, even on
16 the wide channel beds of many of the proposed north
17 slope crossings. Minor evidence of ice push like that
18 shown in this slide has been observed and the scour
19 holes shown in the next slide, were formed during an
20 ice jam behind a mid channel island in the Lower
21 Babbage River.

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1 Sediment transport is also
2 important with respect to any borrow pits, which might
3 be established in the flood plain or active channel
4 zones.

5 The re-establishment of an
6 equilibrium channel bed after mining might cause up-
7 stream and/or downstream channel degradation, which
8 could affect a nearby pipeline. As well, suspended
9 sediment from seepage waters in a breeched borrow pit
10 could affect fish habitats downstream.

11 Q Now you have mentioned
12 bed scour in the context of your discussion of sediment
13 transport. What about bank erosion in these rivers?

14 A There are several things
15 to consider here. First, in the multiple low water
16 channel braided streams, like this slide I showed you
17 of the Firth River, the river is really cutting into
18 its own bars in the active channel. This can occur
19 very rapidly and our data from the lower Firth River
20 suggests that these bars may be the most important
21 source of both bed and suspended load in the river.

22 However, migration of the
23 entire channel zone, that is the area bounded by the
24 flood plain or the lowest terrace, seems to be much
25 slower, and here for a change, we do have some long-
26 term evidence. We have aerial photographs taken 20 or
27 more years apart.

28 In some locations, fortunately
29 relatively few on the Yukon north slope, channel migrat-
30 ion can be rapid, however, largely because of the

1 presence of excess ice in the channel bank sediments.

2 I have already shown you a
3 slide of a ground ice slump on the lower Babbage River.
4 The headwall of that slump, shown here, retreated over
5 30 feet between the summers of 1972 and 1973.

6 Also, where the flood plain
7 banks are composed of fine grained ice rich sediments,
8 thermal niching and subsequent block slumping, I believe
9 these terms have already been discussed, that can lead
10 to rapid bank recession.

11 This next slide on the upper
12 Babbage River, shows thermal niching and block slumping.
13 Some spots in this area retreated over six feet during
14 the summer of 1972, and over 18 feet between 1972 and
15 1973.

16 All these are factors which
17 must be, and I believe are being considered. The only
18 point with respect to the pipeline that I would like
19 to make here, is that more information on these braided
20 north slope rivers, particularly with respect to ice
21 channelling and potential downstream effects, should
22 be required before river training works are permitted
23 on the active channel beds. This possibility was
24 suggested in the CAGSL report design of the pipeline
25 crossings at braided rivers.

26 Unless this information is
27 available, I think the deep burial mode across the
28 entire bankfull width of what I call the active channel,
29 should be required.

30 Q Now you mentioned the

1 importance of sediment transport in connection with the
2 proposed gravel mining operations. From what valley
3 features, according to your and Dr. Cooper's defini-
4 tions, do CAGSL propose to mine gravel?

5 A I really can't stand --
6 I can't understand all this playing around with
7 definitions that CAGSL seems to be doing -- a Freudian
8 slip.

9 In the application, I will
10 read the Section for the record, Section 14.d.N.7.7.1
11 (iv), they are mining only from inactive flood plains.
12 These are what I would call terraces.

13 Then, in their response to
14 question 39 of the Assessment Group's requests for
15 supplementary information, they are going to mine from
16 active flood plains as well. But these flood plains
17 extend, in theory at least, right to the edge of the
18 flowing water at the time the mining begins.

19 It seems to me that what they
20 are really proposing to do, and why don't they say it,
21 is to establish borrow pits on inactive flood plains
22 or terraces, on active flood plains, and to mine gravel
23 from large portions of the active channel bed. This is
24 definitely indicated in one of their own reports.

25 The reconnaissance of the
26 Alyeska Pipeline, Material Source Borrow Methods, and
27 an Evaluation of These Methods with Respect to Aquatic
28 Habitats", in which a large portion of the report is
29 devoted to sources on river bars of braided streams,
30 that would be in the active channel. And the report

1 includes recommended procedures for Arctic Gas
2 operations.

3 Q What do you think are the
4 relative advantages and disadvantages of these different
5 locations?

6 A Well the main advantage
7 of terrace location, and to a slightly lesser extent
8 the active flood plains, is that they are seldom or
9 never flooded, so the borrow operations are very unlikely
10 to have any downstream effects, either on the river or
11 on the fish which inhabit it.

12 The primary disadvantage of
13 these locations, is that the scar from the borrow pit
14 will persist for a long time.

15 On the other hand, a scar in
16 an active channel bed would soon be healed, and there
17 is no vegetation to disturb.

18 There are, it seems to me, two
19 main concerns with respect to such a location. First,
20 if the pipeline is nearby, will channel degradation
21 following abandonment of the pit affect the integrity
22 of the pipeline and, second, will fish be affected?

23 I believe after reading the
24 report on the Alyeska operations, and studying CAGSL's
25 proposed mining procedures, that neither of these two
26 problems is unsurmountable. The influence of increased
27 sediment concentrations on fish has been the focus of
28 much concern, but it appears to me for the north slope
29 rivers -- I speak only for the north slope rivers --
30 that the only real problem would be caused by high

1 sediment concentrations which lasted for a considerable
2 length of time, and I think that CAGSL's proposed pro-
3 cedures would prevent this. I'm not a fish expert,
4 but I can't see how a high suspended sediment concent-
5 ration in itself, or even the timing of that concentrat-
6 ion, could harm the north slope fish population, and I
7 think this because high concentrations occur sporadic-
8 ally and at any time throughout the open water season,
9 whenever there is a storm flood. So I think the key
10 thing here is duration.

11 Q Now, Dr. Lewis, let's
12 turn to the ground water and river icing problem which
13 has been discussed already in these hearings. Is
14 there any evidence of winter ground water flow beneath
15 the channels of Yukon north slope rivers?

16 A Yes there is, and it's
17 primarily shown by the presence of river icings or
18 aufeis some of which are perennial, and are
19 located in the active channel of a number of the north
20 slope rivers.

21 The following slide sequence
22 shows some of these locations.

23 This is a view downstream,
24 across the proposed CAGSL crossing location on the
25 Malcolm River. A large perennial icing is shown in the
26 background.

27 The next slide is a closer
28 view of the upstream edge of the Malcolm icing. Note
29 the water ponded behind the ice sheet.

30 This shows icings on the Firth

1 River fan, also perennial. This view is looking up-
2 stream from the Beaufort Sea towards the proposed
3 crossing site near the edge of the British Mountains,
4 which are in the background there.

5 This is a closer view of the
6 Firth River icings. The black mounds are sediment
7 covered ice.

8 This is a view of an extensive
9 icing on the Babbage River, at a location far upstream
10 from the proposed crossing site.

11 This slide also is of the
12 upper Babbage River, and it shows a number of rib-like
13 features. To me, at least, these are of unknown origin,
14 they are probably formed beneath an icing. They do
15 illustrate, I think, the effect or an effect that an
16 icing can have on the bed of the river. Sediment has
17 been moved and placed into particular shapes because
18 of an icing.

19 Now, of these icings, I think
20 the most critical with respect to the pipeline, are
21 those of the lower Malcolm and Firth Rivers. They are
22 located just downstream from the proposed crossing
23 sites, and are known to be fishover wintering areas.

24 Now, unfortunately, again as I
25 have said so many times, there is very little known
26 about river icings, except the general way in which
27 they form. I don't propose to discuss how they are
28 formed, I think it's been quite fully covered in earlier
29 testimony, except that I would like to say that the
30 extent, thickness and duration of a river icing can

1 vary from year to year, and that any study lasting only
2 one or two years, although it would be certainly valu-
3 able since we don't really have any studies at the
4 moment, would leave a lot of questions unanswered.

5 Q Dr. Lewis, what do you
6 believe is the significance of these ground water
7 flows across the pipeline crossing sites?

8 A I guess the prime concern
9 is that the frost bulb which will grow around -- not
10 aground the pipeline as it says here, but around the
11 pipeline when it is in operation, will cut off or
12 seriously diminish the supply of water to fish-over
13 wintering areas downstream.

14 In addition or as well, a new
15 icing may grow at the pipeline location, causing a
16 channel construction with resultant effects on channel
17 stability, depth of scour, et cetera, et cetera. It
18 will affect the bed of the channel.

19 Q We have been told on
20 several occasions, most prominently by the applicant
21 CAGSL in their response to question 38 of the Assess-
22 ment Group's "Requests for Supplementary Information",
23 that the growing frost bulb beneath the river could
24 interfere with ground water flow. Could you comment
25 on the solutions proposed by CAGSL?

26 A Yes, I have a number of
27 comments. First, I should say that I am not competent
28 to criticize in any way, the thermal model used by
29 CAGSL to compute the size and shape of the frozen bulb
30 around the pipe. This is in the Battele report, a

C.P. Lewis
In Chief

1 "Convective Model for Subsurface Flow Around a Chilled
2 Pipe", but I am amazed at some of the input data used
3 in the model for the Firth and Malcolm Rivers.

4 I find in the response to
5 question 38, that both of these rivers have five feet
6 of flowing water in them at the time of maximum ice
7 thickness. This is surprising because I, and I think
8 CAGSL's hydraulic engineers, are under the impression
9 that these rivers freeze to their beds along most of
10 their length.

11 CAGSL's own estimate of the
12 bankfull depth, that's the flood depth at their proposed
13 Firth River crossing site is only 6.4 feet, so that
14 even if the river did freeze at and maintain this depth
15 all winter, which is an event I would consider to fall
16 in the miracle category, ice thicknesses on the north
17 slope rivers would -- I have confusion here.

18 If they did freeze and maintain
19 this depth all winter, the ice thicknesses are commonly
20 much greater than the 1.4 feet, which is all you would
21 be able to have to get a thickness -- to get five feet
22 of flowing water, when your total depth at flood is 6.4
23 feet.

24
25
26
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30

So we have to consider situation 3 of the response to question 38, rather than situation 2, when we talk about the Firth and the Malcolm Rivers.

Q What are those two situations?

A The situation 2 had five feet of water flowing freely on the channel beneath ice during the winter. In situation 3 the rivers were frozen to the bottom. So I think that situation 3 is the one which applied to the Firth and the Malcolm. Now the Battele example which corresponds to this; suggests that the Malcom River at least, which as I said has a maximum depth to permafrost of about 25 feet, would freeze off completely in about three years.

So we must conclude that winter ground water flow in the Malcolm and probably the Firth will be severely disrupted or even stopped by the frost bulb around the pipeline, and that new river icings may form at the crossing sites. This is in direct contrast to the conclusion reached by CAGSL in their response to question 38.

Furthermore. in that response CAGSI states that they will not plan ahead against such problems but will take remedial meaures only. Even if, as Dr. Clark stated on page 3492 of the Commission transcript, these measures will be taken before the pipe is chilled, I would hardly consider this an adequte approach to what could be a very serious problem.

1 The much-discussed culvert
2 solution is an interesting one and it may well
3 work but I don't think that after construction is the
4 time to test it out.

5 Q Dr. Lewis, in that
6 connection, do you have any recommendations or opinions
7 that you would propose to the Commission?

8 The pages are out of order here.

9 THE COMMISSIONER:

10 Question 19 is the one that
11 Dr. Lewis has just been dealing with question 20 reads
12 and it says, page 23 at the top, are the ground water
13 problems that we have been discussing restricted to the
14 Yukon north slope or do they occur elsewhere along the
15 proposed pipeline route of Foothills or CAGSL. is that where
16 we're at Dr. Lewis?

17 A No, sir, I think there
18 was more to question 19. If I just answer Steve's
19 question as he gave it.

20 THE COMMISSIONER: Go right
21 ahead.

22 A As far as recommendations
23 I would think that one of the first things to do would
24 be to incorporate the culvert into the Battele model and
25 that hasn't been done yet, and further, I would recommend
26 that firstly, a drilling program be initiated to identify
27 all streams with significant ground water flow, secondly
28 that realistic input data for the Battele model be
29 obtained from field measurements for all these streams
30 rather than from educated guesses.

10593

1 Thirdly, that the culvert
2 technique be tested in the field, and if it proves
3 feasible, that culverts be installed before the pipeline
4 is chilled in each stream with significant ground
5 water flow unless the absence of fish can be proven.

6 Q Finally, Dr. Lewis,
7 are the ground water problems we have been discussing
8 restricted to the Yukon north slope or do they occur
9 elsewhere along the proposed pipeline routes of Foothills
10 or CAGSL?

11 A I believe from what I
12 have read that similar problems could occur in many
13 areas, particularly along the western slopes of the
14 Norman Range. I'm not personally familiar with that
15 area, however.

16 Q Now, Dr. Lewis. to
17 conclude your evidence, would you be good enough to
18 file with the Commission the reports from which you
19 have relied in preparing your evidence?

20 A Yes, I will.

21 Q You have them with you,
22 I take it?

23 A Yes.

24 MR. GOUDGE:

25 That, Mr. Commissioner concludes
26 Dr. Lewis' evidence in chief, and as I said earlier,
27 counsel I think would ask him to return on October 14
28 and he has told me he's prepared to do that for cross-
29 examination. I would ask however that if on a review of
30 the transcript in connection with either Mr. Longlitz
or Dr. Lewis, if counsel are not going to have questions

1 of either of them that they notify us so that it won't
2 be necessary for them to re-attend, that I think is
3 unlikely but should that arise we would be grateful
4 to be notified.

5 THE COMMISSIONER: Well thank
6 you very much Dr. Lewis. (witness aside)

7 MR. MARSHALL: Mr. Goudge,
8 you've indicated a number of reports are going to be
9 filed. I take it that these might be made available
10 to my advisors?

11 MR. GOUDGE: I'm sure they
12 are mainly your reports, Mr. Marshall. You can perhaps
13 look at them. they're there beside Dr. Lewis and they
14 can be made available to you.

15 MR. MARSHALL: I'm thinking
16 specifically of some of the research that he indicated
17 he had been involved in and I'm sure that Dr. Harlan
18 and others would like to review it with him.

19 THE COMMISSIONER: I think
20 that the reports that you referred to should be marked
21 as exhibits, but when we adjourn, Dr. Harlan can speak
22 to Dr. Lewis and they can arrange between them for Dr.
23 Harlan to get all that he needs. Would that be alright?

24 MR. MARSHALL: Thank you very
25 much sir.

26 MR. GOUDGE: Yes, we'll
27 certainly do everything we can.

28 MR. HOLLINGWORTH: May I suggest,
29 as with other witnesses, that a list of these documents
30 be attached, -- be prepared to be attached to the testimony

1 of Dr. Lewis as we may well want to have a look at
2 these documents.

3 MR. GOUDGE: We're quite
4 prepared to do that.

5 THE COMMISSIONER: Forgive
6 me, this sounded an awful lot like the Prudhoe Bay
7 supply leg.

8 Mr. Marshall: You will recall Mr. Blair's
9 evidence.

10 MR. HOLLINGWORTH: Would you
11 like to take the stand, Mr. Marshall.

12 THE COMMISSIONER: Well, that's
13 fine. Dr. Lewis, thank you very much and we'll have to
14 ask you I'm afraid to return on October 14th, that is
15 Tuesday October 14th, and some of the representatives of
16 the parties will want to question you then, but if you
17 wouldn't mind staying after we adjourn and just speaking
18 to Dr. Harlan about these reports and supplying him with
19 any he doesn't have, that would be appreciated.

20 Thank you.

21 I was wondering if counsel,
22 any of counsel wished to speak to that proposed schedule
23 for 1976 that was circulated. Does anyone have any
24 remarks? If they do, they can make them now and Miss
25 Hutchinson can make a note of them and they'll be borne
26 in mind?

27 MR GOUDGE: Yes, I think
28 sir, I've been advised by some of my colleagues, that
29 they first wish to take a day or two to review it with
30 their people and secondly, contact us perhaps after they

1 have done so and we can note the comments at that time.

2 THE COMMISSIONER: Fine.

3 That's perfectly understandable.

4 MR. HOLLINGWORTH: May I make
5 an inquiry sir. You say in B. hold formal hearings
6 (community hearings in the evening) in Inuvik. I assume
7 that you don't plan to have a community hearing every
8 evening for two weeks in Inuvik?

9 THE COMMISSIONER: Well I
10 think that we'll do what we did in Whitehorse, if --
11 that is a good point. If the people of Inuvik wanted
12 community hearings every evening, we would perhaps be
13 overtaxing ourselves as we did in Whitehorse. I concede
14 that the Whitehorse schedule was a difficult one and
15 this would be two weeks of what we tried to do in
16 Whitehorse, so -- let's bear that in mind, Miss Hutchinson
17 and not wear ourselves out.

18 Mr. Bayly, I wonder if you
19 would let us know, when you've talked to the Committee
20 for Original Peoples Entitlement, what communities they
21 want the Inquiry to visit. Certainly the Inquiry
22 ought to visit and hold community hearings in Inuvik,
23 Tuktoyaktuk, and the Inquiry is committed to return to
24 Aklavik, but you might let us know whether your clients
25 expect us to visit Arctic Red River, Sachs, Holman and
26 Paulatuk.

27 MR. BAYLY: Mr Commissioner
28 I think I can tell you now that certainly the people of
29 Sachs Harbour, Paulatuk, and Holman are anticipating that
30 you will visit them. As far as Arctic Red River is

1 concerned, I think Mr. Bell -

2 Mr. Goudge The welcome
3 mat is out.

4 MR. MARSHALL: I guess that
5 leads me to the only comment I had on the proposed
6 schedule sir and that was that it didn't appear to me
7 that it had an end.

8 THE COMMISSIONER: Well that's
9 a problem isn't it.

10 Well if that's all then, I
11 suppose we should adjourn. We'll adjourn until the
12 Inquiry reconvenes in Pine Point on Monday, October 6,
13 at 1:00 at the Recreation Hall, and the formal hearings
14 will be adjourned until we reconvene here in Yellowknife
15 on Tuesday, the 14th at 1:00.

16 MR. GOUDGE: Sir, there's
17 been some requests by counsel, particularly from the
18 province immediately south of us, that we might make
19 the starting time on the 14th, 2 p.m., that would
20 allow them a leisurely morning and a later plane.

21 THE COMMISSIONER: All right,
22 two o'clock then.

23 Two o'clock here on October
24 14th, Tuesday October 14th.

25 (PROCEEDINGS ADJOURNED TO OCTOBER 14, 1975 AT 2:00 P.M.)
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29
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Mackenzie Valley pipeline inquiry:

Vol. 70

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Vol. 70

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MACKENZIE VALLEY PIPELINE INQUIRY

Government
Publication

IN THE MATTER OF APPLICATIONS BY EACH OF
(a) CANADIAN ARCTIC GAS PIPELINE LIMITED FOR A
RIGHT-OF-WAY THAT MIGHT BE GRANTED ACROSS
CROWN LANDS WITHIN THE YUKON TERRITORY AND
THE NORTHWEST TERRITORIES, and
(b) FOOTHILLS PIPELINES LTD. FOR A RIGHT-OF-WAY
THAT MIGHT BE GRANTED ACROSS CROWN LANDS
WITHIN THE NORTHWEST TERRITORIES,
FOR THE PURPOSE OF A PROPOSED MACKENZIE VALLEY PIPELINE

and

IN THE MATTER OF THE SOCIAL, ENVIRONMENTAL AND
ECONOMIC IMPACT REGIONALLY OF THE CONSTRUCTION,
OPERATION AND SUBSEQUENT ABANDONMENT OF THE ABOVE
PROPOSED PIPELINES

(Before the Honourable Mr. Justice Berger, Commissioner)

Yellowknife, N.W.T.

October 14, 1975.

PROCEEDINGS AT INQUIRY

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CANADIAN ARCTIC
GAS STUDY LTD.

OCT-20 1975

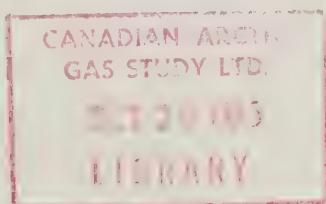
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APPEARANCES:

Mr. Ian G. Scott, Q.C.
Mr. Stephen T. Goudge,
Mr. Alick Ryder and
Mr. Ian Roland for Mackenzie Valley
Pipeline Inquiry;
Mr. Pierre Genest, Q.C.
Mr. Jack Marshall,
Mr. Darryl Carter, and
for Canadian Arctic Gas
Pipeline Limited;
Mr. Reginald Gibbs, Q.C.
Mr. Alan Hollingworth for Foothills Pipelines
Ltd.;
Mr. Russell Anthony,
Prof, Alastair Lucas for Canadian Arctic
Resources Committee;
Mr. Glen W. Bell and
Mr. Gerry Sutton for Northwest Territories
Indian Brotherhood and
Metis Association of the
Northwest Territories;
Mr. John Bayly for Inuit Tapirisat of
Canada and the
committee for Original
Peoples Entitlement;
Mr. Ron Veale and
Mr. Allen Lueck for the council for the
Yukon Indians
Mr. Carson H. Templeton for Environment Protect-
ion Board;
Mr. David Reesor for Northwest Territories
Association of Muni-
cipalities
Mr. Murray Sigler for Northwest Territories
Chamber of Commerce

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274 Publications by P.J. Williams

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275 Thesis by P.J. Williams

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276 Report on Scour in East Channel of
MacKenzie River by UNIES Ltd., Feb/75

10601

Yellowknife, N.W.T.

October 14, 1975.

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. GOUDGE: Mr. Commissioner,
I wonder if we could resume the formal hearings?

Before I recall Mr. Longlitz to be cross-examined by the other participants, there are some matters arising out of Dr. Williams' evidence of last time that I think I'd like to attend to, if I may. I'd like to file with the Inquiry a list of relevant papers relating to frost heave pressure. You will recall that Dr. Williams was asked by one of the participants to provide such a list. He's prepared such a list, which I'd like to file as an exhibit. With it I would like to file a list of his publications which are as well documents that he relied on as the basis for his evidence.

I have as well one copy of his thesis, which was referred to in his evidence and which I would like to file as an exhibit.

I then have to file as well a report which was referred to in his evidence as being prepared by the Carlton University group of which he's a member on slope stability and matters of that kind. I have two additional copies besides the one to file, which the participants can examine at the Inquiry Offices. The report is dated February, 1975, which, as you will recall, sir, was before the commencement of the formal hearings, and it is based on sections of the CAGSL application and some of their responses to the

1 Assessment Group's questions, and the Assessment Group
2 Report. Those who prepared this document did not have
3 in hand some of the later material which was filed by
4 Arctic Gas at the beginning of this Inquiry, in particular
5 some of the information which derives from the
6 Calgary test facility. Included with the report is an
7 addendum relating to the geothermal analysis of the
8 applicant, Arctic Gas. That addendum was prepared in
9 March, 1975, again relating to and based on the back-
10 ground documents available at that time.

11 So, sir, if I could file those
12 four pieces of information with Miss Hutchinson and have
13 them marked as exhibits, they were matters arising out
14 of Dr. Williams' evidence.

15 (LIST OF PAPERS RE FROST HEAVE PRESSURE MARKED
16 EXHIBIT 273)

17 (LIST OF WILLIAMS' PUBLICATIONS MARKED EXHIBIT 274)

18 (COPY OF WILLIAMS' THESIS MARKED EXHIBIT 275)

19
20 MR. GENEST: Mr. Commissioner,
21 I wonder if we could have an opportunity to at least
22 look at these? I know I've no objection to the list of
23 relevant literature, that was an undertaking made by
24 Dr. Williams when he was in the box, nor to the list of
25 his publications. I don't know about his thesis, but I
26 am somewhat disturbed by the report filed by Carlton
27 University, which apparently comments on our application
28 which I don't have Dr. Williams' evidence right at hand
29 but I have no present recollection of that being raised
30 as an issue or a matter testified to by Dr. Williams

D. Longlitz
Cross-Exam by Templeton

1 in his testimony in chief, and I should like to have
2 the opportunity to at least make submissions as to
3 whether that should be received, or should be received
4 on the terms that we get an opportunity at some conven-
5 ient time to cross-examine the authors.

6 MR. GOUDGE: We simply produce
7 them, Mr. Commissioner, because it was requested by
8 Mr. Genest's associate, Mr. Marshall, that we do so.
9 ^{Carlton}

10 MR. GENEST: Was the/university
one in that category, Mr. Goudge?

11 MR. GOUDGE: My recollection is
12 that it was.

13 MR. GENEST: Well, could I have
14 an opportunity, sir, to look at them before they are
15 formally admitted in evidence?

16 THE COMMISSIONER: Yes.

17
18
19 MR. GOUDGE: That completes
20 the matters that I'd like to refer to at the beginning
21 of today's hearing, sir, and then perhaps could we recall
22 Mr. Longlitz to the witness table, please, and he can
23 be cross-examined in due order?

24
25 DON LONGLITZ, resumed:

26 MR. HOLLINGWORTH: Mr. Commis-
27 sioner, might I file a report that was referred to in
28 cross-examination of Foothills panel, a report of UNIES
29 Ltd. dated February, 1975 entitled:

30 "Report on Scour in the East Channel of the

D. Longlitz
Cross-Exam by Templeton

1 Mackenzie River Below Tununuk Point."

2 THE COMMISSIONER: All right,
3 that report can be marked as an exhibit.

4 (REPORT ON SCOUR, FEBRUARY 1975, MARKED EXHIBIT 275)

5 MR. GOUDGE: I take it, Mr.
6 Commissioner, since there were no objections to the
7 other material filed, the slide and slope stability
8 report of Dr. Williams & Associates; that only that
9 report need not be marked at the moment.

10 THE COMMISSIONER: All right.

11 MR. GOUDGE: You will recall,
12 sir, that last day Mr. Longlitz completed his evidence
13 in chief. I take it the ordinary course of cross-examina-
14 tion that I referred to would commence with Mr. Bayly.

15 MR. BAYLY: I understood Mr.
16 Templeton had some questions and I thought normally that
17 he would proceed. I am quite content to start off.

18 THE COMMISSIONER: Well, if
19 Mr. Templeton has some questions, why don't we ask him
20 to go ahead now?

21 MR. GOUDGE: By all means, sir.

22
23 CROSS-EXAMINATION BY MR. TEMPLETON:

24 Q Mr. Longlitz, you're, I
25 guess, the head of -- we've been discussing an agency
26 to control the pipeline operations including terrain,
27 and your job at the present time, I assume, is the head
28 of an agency to control perhaps less intensive
29 operations, but under the land use regulations, is
30 that right?

1 A Yes, that is true.

2 Q So I think your experience
3 is pretty important to us because we are now at the
4 place, I think, of discussing terms and conditions that
5 would be imposed on a pipeline company and I wonder
6 if you are familiar with the terms performance code
7 or performance specification as separate from a
8 construction specification?

9 A Not fully, I couldn't
10 answer that --

11 Q Well, perhaps if we went
12 through a couple of questions it might be a little
13 more clearer. I realize that those are rather specific
14 things and perhaps don't mean the same to other people,
15 but I think what I am trying to get at is how would
16 we spell out the terms and conditions for the
17 pipeline company? Should they spelled out in the
18 performance that is required to achieve an end result
19 or should they be spelled out in detail as to precisely
20 what the pipeline company will do throughout its
21 construction operations. For example, under, Mr.
22 Commissioner, I have given him a copy of our code and
23 I realize that he hasn't had a chance to read it, but
24 under the heading, "Winter Road Construction",
25 paragraph twenty, page 13, the pipeline company would
26 be required by the authorized officer to provide lay-
27 outs of all proposed winter roads, all details that
28 are proposed, minimum snow or ice thicknesses and
29 densities, periods of construction, periods of use,
30 maximum axel loads anticipated, number of vehicle

1 passes, records of the normal freeze up and break up
2 dates for the areas in which the roads are to be
3 located, ice bridge locations, amounts of normal snow-
4 fall in the area and that this would be submitted to
5 the authorized officer, or the agency, in sufficient time
6 so that they could give an approval.

7 Now, is this the sort of
8 thing that you would expect?

9 A Well, firstly as far
10 as an operation such as we are talking about the
11 construction of a pipeline, is what you are referring
12 to here, as you say, it is quite a different magnitude
13 and the operations that I am normally working with.
14 We, -- in my estimation here there are things that --
15 you may be asking things that are impossible, because
16 some of the things are very specific and I don't know
17 that you could be that definite and --

18 THE COMMISSIONER: Could you
19 give me an example?

20 A Well, for instance the
21 number of passes in one spot.

22 THE COMMISSIONER: Passes by
23 a bulldozer --

24 A Yes. I think that
25 there's -- from my own experience I used to work as
26 a construction foreman and I had some trouble in
27 making sure that I only could keep one vehicle in
28 one spot, and that is all that could go into that
29 spot and I don't know that --

30 MR. TEMPLETON:

Q Well, I think that parti-

1 cular example was perhaps traffic passes rather than
2 the bulldozer passes needed to make the road. In
3 other words, it is the traffic you are going to put
4 on them which can be anticipated, I think.

5 A Well, I might also say
6 that depending on the time period and this kind of
7 thing, once you have a properly prepared road or
8 access or anything, the amount of passes over top
9 of that in that particular time frame, I don't know
10 that we have had that kind of a problem in --

11 THE COMMISSIONER: You mean
12 that it hasn't mattered to you how many -- how much
13 traffic there has been. If the road is there and
14 properly built you are okay.

15 A Yes, provided of course
16 you are in with the time frames There are certain
17 times you wouldn't want to operate too late in the
18 year and this kind of thing --

19 THE COMMISSIONER: Well,
20 if you went from January the 1st to January the 30th --

21 A Mm-hmm.

22 THE COMMISSIONER: -- it doesn't
23 matter how much traffic goes over the road, that is
24 your point, I take it?

25 A Yes, right, confined to
26 to the width and everything within the road, yes.

27 MR. TEMPLETON:

28 Q Do you think that you
29 should, one of the terms and conditions should be
30 the spelling out of the gross vehicle weight, is that a

D. Longlitz
Cross- Exam by Templeton

1 significant --?

2 A Again, I think if you
3 take two vehicle, a D-6 wide pad and you can take a
4 D-6 and narrow pad track on it and so gross vehicle
5 weights are going to be -- your ground bearing vehicle
6 is going to be different and so therefore I find
7 it a little bit tricky in stating some kind of --
8 along that line.

D. Longlitz
Cross-Exam by Templeton

1 Q Well, in other words what
2 you're saying is you want a tire pressure or something
3 that's going to limit the individual tire load rather
4 than the gross vehicle weight.

5 A Yes.

6 Q Is it usual that you would
7 require the permittee to notify the authorized officer
8 at least 48 hours before commencement of any road,
9 including access roads or any operation at all?

10 A Yes, my experience with
11 that in the past has been that if you have that contact
12 prior, you can avoid any minor little complications or
13 problems that may arise. It also gives you a chance
14 then to be on site when the operation starts.

15 Q Yes.

16 A It gives you a better
17 contact.

18 Q Well, do you think that
19 48 hours is enough for a large operation such as this
20 or that is contemplated?

21 A Well, again I get kind of
22 caught up here between what kind of a group you would
23 have governing or looking after the operation if you
24 had people that were very close and on the site, you
25 may work right along with the operation and not require
26 that kind of thing, and if you didn't have and you were
27 operating from an independent source, I think you would
28 probably want a little longer.

29 Q I suppose the 48 hours
is a reasonable time, or is it, to shut down operations?

D. Longlitz
Cross-Exam by Templeton

1 I think you said that you had some tentative dates in
2 April.

3 A No.

4 Q And then but you wanted
5 to be able to vary those and but you would give the
6 applicant 48 hours notice, is that right?

7 A Yes, in advance, mind
8 you sometimes usually about 30 days in advance we ser
9 -- I shouldn't say "we", there have been letters gone
10 out to various companies when we say that, you know,
11 within this time frame here, within that date you can
12 expect to be shut down, and very close within 48 hours
13 surrounding that date, and therefore they have lots of
14 pre-planning to do and get everything arranged so that
15 they're finished.

16 Q Yes, and I assume that
17 this much larger operation would take a lot more
18 pre-planning to get -- you would require them, would
19 you, to bring the equipment to a central depot? You
20 wouldn't just stop the work and leave the construction
21 equipment strung along the line, or would you?

22 A I would -- there are
23 two things. I think the companies from what we found,
24 or what I found in the past, the companies like to get
25 them back to a depot so they can repair them during
26 shut-down periods so that they're prepared to go again
27 next year. Otherwise they're strung out and it's just
28 about impossible to do mechanical repairs and this kind
29 of things to vehicles. So we find normally that,
30 you know, they go back to a central centre.

D. Longlitz
Cross-Exam by Templeton

1 I don't know, getting back to your -- I wasn't quite
2 answering your question there. I would think that I
3 can see you wouldn't want to have them strung, I don't
4 think, continually all along the various places. I
5 think there would be some kind of a grouping system.

6 Q If it were strung all
7 the way along, would there not be quite an inclination
8 for them to take some track vehicles out in summer to
9 repair them, and perhaps do some terrain damage?

10 A Well, that would of
11 course again be --

12 Q But you wouldn't allow
13 that?

14 A No.

15 Q In the construction of
16 winter roads, there have been quite a bit of discussion
17 -- this is on paragraph 20.9 on page 13 -- there has
18 been quite a bit of discussion about the harvesting of
19 snow for use of winter roads if there isn't enough
20 snow, and the manufacture of snow from snow-making
21 machines. I was wondering if you'd thought of any
22 terms and conditions about where this snow can be
23 obtained that's off the right-of-way and how the
24 permission is obtained from the land use inspector,
25 or the authorized officer, or whoever?

26 A Well, we are again in
27 my opinion I would be looking at cleared areas that
28 are adjacent to the program, or else also along the
29 area where you're going to be working. It's not,
30 I wouldn't think, clearing an area off would be too

D. Longlitz
Cross-Exam by Templeton

1 appropriate really, if you could avoid it at all.

2 Q Well, would this clause be
3 agreeable to you then:

4 "Winter roads shall be constructed and maintained
5 utilizing snow from only pre-cleared rights-of-way.
6 The procurement of snow from areas outside of pre-
7 cleared rights-of-way shall be permitted only
8 with the authorized officer's prior approval."

9 Would you agree with that?

10 A I think I would. It would
11 probably be a little bit tough for the operator, but
12 that would be par for the course; he'd have to work that
13 out, and comply with it. As you say, you've given him
14 an out to approach the authorized officer, so he
15 shouldn't find it too binding to get the job done.

16 Q Well then on the next
17 page, 20.12,

18 "Ice bridges shall be constructed only in
19 locations approved by the authorized officer."
20 Do you agree with that?

21 A Again I think certainly
22 we would like to make sure that pre-scouting and this
23 kind of thing had gone ahead, and hopefully this would
24 be part of your design package in the beginning so
25 that I don't know that you'd have to be right on the
26 spot to construct an ice bridge. It's hopefully some
27 responsibility on the part of the operator, the cat
28 skinner or whoever is building the ice bridge there,
29 to carry it out under correct supervision of the company

30 Q O.K. Paragraph 20.13,

D. Longlitz
 Cross-Exam by Templeton

"Ice bridges shall be constructed of
 compacted snow and ice and shall incorporate
 no other material."
 I believe that's a little bit different than you had
 said, and I didn't see your photograph but I gather
 from the transcript that you showed an ice bridge with
 other material in it.

D. Longlitz
Cross-Exam by Templeton

1 A Well, I have not seen
2 too much of a problem with the use of logs which is
3 what you are referring to, a praggged(?) or limbed logs
4 if they are removed prior to breakup and this would
5 possibly be a little bit hard to work with if you
6 get into a dry streambed or something like this.

7 Q Yes, I think that comes
8 to the next question was I believe one of the applicants;
9 I believe Foothills said that they would ordinarily
10 leave the ice bridges in. Is that acceptable to you?

11 A Again it would depend on
12 the specific site. If the bridge was going to form
13 a blockage to the stream and cause it, you know, to
14 flood out / ^{around it.} I think then of course it would have to
15 be removed. If it is sway-backed, as we call it, or
16 got a very -- a nice sway to it, you would find the
17 water would go over the middle and would naturally take
18 its course and take it out with very minimal
19 disturbance.

20 Q But if you used logs on
21 the ice bridge, these would have to be removed, I
22 gather?

23 A Yes.

24 Q And I suppose it goes
25 without saying that ice bridges shall be constructed
26 so as not to detrimentally interfere with or impede
27 winter flows in any river or stream.

28 A Yes.

29 MR. TEMPLETON: That is all
30 the questions I have, Mr. Chairman.

1 CROSS-EXAMINATION BY MR. BAYLY:

2 Q Yes, I would like to
3 begin by referring you to the land use regulations
4 and to ask you some questions surrounding these
5 regulations. I would like to refer you first to
6 Section 32.1. Do you have a copy of the regulations
7 before you, sir?

8 Have you a copy of the
9 regulations before you, sir, or should I get you one
10 as well?

11 Thank you.

12 Referring to section 32.1 ,
13 could you tell me, Mr. Longlitz, whether land use
14 inspectors themselves have the power to suspend over-
15 ations, that is, in a practical sense although it
16 doesn't say so in the regulations, or is that only
17 exercisable by the engineer, in this case yourself?

18 A I have read this a
19 number of times myself and depending on how you work
20 your administration it can have immediate effect as
21 suspension type of thing on a particular operator
22 or it can work either way depending on the inspectors.
23 As you will note here he has the time frame, he can
24 designate a time frame here for when this work can be
25 carried out and therefore it depends on --- it is
26 entirely up to him really --

27 Q If we took a situation
then where a land use inspector came upon something
in a project that he didn't approve of and he asked the
operator to correct it and the operator either couldn't

1 or wouldn't, are you saying in practical terms he
2 could say, "Okay, you are shut down", or would he have
3 to go back to you in order to do that?

4 A Well, I think that in
5 here it says that he shall so inform the operator and
6 in doing so that informing would specify a time limit
7 in which the operator had to comply in that time
8 frame. If he didn't, then of course the onus is on the
9 inspector to ask for a suspension.

10 It is actually just as it
11 is worded ⁱⁿ here. It follows that chronological
12 order.

13 Q Do you run into some
14 situations where the inspector will ask for an immediate
15 stoppage of something that is going on, that he may
16 feel is obviously harmful to the area in which the
17 operation is being carried out, or has that not arisen?

18 A I think probably as a
19 general rule, once if you get into a situation where
20 there is some harmful work being done and the operator
21 is told of it, there is usually -- it is usually that
22 a stoppage occurs right away or else they go back and
23 start a restoration right away on it, so you -- it's
24 not really in that context, I don't think. Mind you,
25 I can't say that it hasn't happened. I can recall, in
26 the past from my own experience, you know, where it
27 has happened, but normally with the educated operators
28 now you tend to get a lot of co-operation as soon
29 as you point out something that they may be totally
30 unaware of, you see.

D. Longlitz
Cross-Exam by Bayly

Q All right, so effectively,
if the land use inspector on the spot sees something
and says, "Don't do it," or "Stop doing it", that has
the effect of stopping it from happening, is that
what you are saying?

A Yes, I would have to --
the companies are well aware of these regulations
and Section 32 and they take it to heart when a fellow
gets out there and they'll, you know, get right on
it, and try to find out and get down to basics of
the thing right off the bat and see what is going on.

Q Now, let's take the
situation where an operation has been completed and
the provisions for that seem to be found in section
24. If you would like to turn to that section.
In that section it appears that a final report or
final plan must be submitted to you as the engineer
on the completion of the work and would you tell me
if this is in general accompanied by a final inspection
by your office?

A Well, again there are
some seasonal trends here which would not allow you
to work. I think of an operation that may have gone
on and finished in February, while the final plan
would be in then by April 30th, say, and of course
you would be in no way prepared to do a final inspection
on that until the snow had completely disappeared from
the area and you could get out and have a good look
at it. So the final report would follow later on,
you know, depending on when you put it in with your

1 work load and everything to cover off, to see the
2 whole works.

3 Q All right, now it
4 doesn't appear to be provided in the regulations that
5 a final report has to be done but is it the practice
6 of your office to do a final inspection that is not
7 reported? Is it the practice to do a final inspection
8 on every project?

9 A Yes.
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D. Longlitz
Cross-Exam by Bayly

Q Now, Section 34 deals with those situations where an operation concludes before its target date, and there is an onus upon the operator to give a notice of discontinuance to the -- to your office. Do you run into situations where that is not complied with, where you have to do a fair bit of chasing to get the final report, the notice of discontinuance?

A No, not really. Usually by the monitoring of these programs by field people you are able to follow the program right along and you know exactly where everything is at a good percentage of the time on your inspection tours. Normally, you see, it depends on an operation, if you've got one, usually there's a movement of vehicles and equipment at the end of an operation that are going somewhere else or doing something else, so therefore they have to be tied into another permit, or something else, some other area of authorization, at a staging area, whatever, so you've got fairly close control that way.

Q Do you set out a schedule of monitoring for each individual project for which there is a permit issued? Do you decide in your own office how often you will inspect this in the regular course of things?

A No.

Q What determines when you will monitor a project? Do you monitor one only when you get complaint, or only where the operator says he has a problem?

D. Longlitz
Cross-Exam by Bayly

1 A No, every one of them is
2 monitored. We have a basis set up, they're all treated
3 the same, except again it depends on the -- there's
4 a built-in system whereby if you feel you have to go
5 back there, it depends on the individual at the site,
6 if you should encounter some operation that you think
7 could be a problem, then he may go back within a week,
8 he may go back within three days. It is left up to the
9 individual on the site to get in there to follow the
10 program.

11 Q All right, what do you
12 do as an engineer in this if an individual inspector
13 decides that he's going to go back in periodically and
14 you think he should go in more frequently than he's
15 decided, do you step in and say, "You really should go
16 in more often," or how do you control that?

17 A Well, again if that would
18 be, like you're talking about almost functional super-
19 vision or something along this line, and if that was
20 the feeling, yes, we would step in and talk to him.

21 Q So you can and do do this,
22 do you, if the project, for example, were in a very
23 sensitive area you might decide there should be more
24 inspections than there were?

25 A Yes, oh yes, that can be
26 done, yes.

27 Q Now, I gather in some
28 instances you decide not to issue a permit and there is
29 a procedure by which an applicant, who is unsuccessful,
30 can appeal under Section 36 of the regulations. He can

D. Longlitz
Cross-Exam by Bayly

1 appeal to the Minister. Is this something that is
2 done very often?

3 A No.

4 Q Now, in the four or five
5 years that the land use regulations have been in force,
6 can you give us an idea of how many appeals there have
7 been to the Minister?

8 THE COMMISSIONER: Has there ever been
9 one that you know of?

10 A Well, it's interesting,
11 we don't usually go that far. There are, I would say
12 this, there are lots of rejected applications. They
13 are rejected on the basis of insufficient information,
14 on which to judge an operation, so it's usually a situa-
15 tion whereby they're applying more information, getting
16 more information before the application is accepted.
17 There's a section in here to accept applications, so
18 which works towards this end of it. I can't recall --
19 I couldn't give you with any accuracy how many have
20 been appealed to the top, whether they take the form
21 of a direct appeal to the Minister or whether they work
22 at people below the section. You know, this is how do
23 you in your reference to appeal, you know, I wonder,
24 it's pretty hard to pin-point on that.

25 Q Well, in your experience
26 would it be fair to say you've never received notice
27 or letter from the Minister saying, "This has been
28 appealed to me and I have upheld your decision, or
29 reversed your decision."

30 A Well, I've only been in

D. Longlitz
Cross-Exam by Bayly

1 the position for about six months, and in that time, no,
2 I would say you know on conditions that I have demanded
3 be set, I have had that kind of a response, yes.
4 As far as -- I can't picture one in the last while.

5 Q All right. Is it fair
6 to say then that the functional procedure is that if
7 an insufficient application is presented to you, or
8 an application that you refuse to grant for some reason
9 that you will attempt, with the operator or potential
10 operator, to work out an acceptable application with
11 him?

12 A Yes, that's right.
13 If it can be done, yes.

14 Q Now, from the reading of
15 the regulations, it appears that there is no formal
16 mechanism for getting in put from the communities, that
17 is in the regulations themselves. Is that fair?

18 A Yes, that's right.

19 Q But you do in point of
20 fact refer applications to the various communities in
21 the area in which an application is being sought, is
22 that correct?

23 A That, I think, is probably
24 one of the policies of the Department. I don't know
25 whether I can really comment on that.

26 Q I'm not asking you to
27 comment on it. I'm just asking you if it happens.

28 A Yes, it sure does happen.

29 Q It does happen. Thank
you.

D. Longlitz
Cross-Exam by Bayly

1 THE COMMISSIONER: Well, that
2 is done, I take it, with each land use application, is
3 it?

4 A Yes, within the area of
5 interest of the communities.

6 MR. BAYLY: Q And it's your
7 office that directs them to the communities, is that
8 correct?

9 A Not directly, no.
10 It's a field office that's closely related, closely
11 associated and is in the general area.

12 Q It's your department
13 but the field office in the area in which the application
14 is sought that sends them onto the communities.

15 A Yes.

16 Q And this is purely a
17 policy matter which is something which has been directed
18 to your department or your branch to exercise.

19 A Yes.

20 Q Now, I'll come back to
21 that in a little while, but we can go through some of
22 the other regulations as well. I'd like to go into
23 the penalty or bonding provisions, and if we can go to
24 Section 31, Section 31 appears to specify -- I'll take
25 my notes with me.

26 (FIRE ALARM RINGS)

27 (PROCEEDINGS ADJOURNED FOR FEW MINUTES)

28

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(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. BAYLY: When the bell rang we were talking about security deposits and in Section 26 the regulations refer to security deposits as being a maximum of \$100,000 and not to exceed \$1,000 an acre.

Q Now, in your experience would you feel that this is an adequate bond for a company to post in the kind of operations that you have seen in the Northwest Territories?

A Yes, I think on the amount that has been laid out and the bonding of that, it is sufficient. We've had good co-operation and that where a bond has been placed, that is for sure, and on very critical areas where we are concerned I would say, it is my opinion anyway, it seems to work quite well.

Q And if we were contemplating a project the size of the Mackenzie Valley Pipeline would you feel that that amount per acre would be sufficient or would you like to see that reviewed?

A I don't think I could comment on that. I am not that, shall I say, that familiar with the operation that we are talking about or how it is handled or anything else and I think that has a lot of bearing on the whole thing. I wouldn't want to comment on that.

Q All right, now --

THE COMMISSIONER: Excuse me,

D. Longlitz
Cross-Exam by Bayly

1 the pipeline guidelines say something about a bond,
2 a bond in a certain amount, don't they, Mr. Goudge?

3 MR. GOUDGE: You caught me, Mr.
4 Commissioner.

5 MR. BAYLY: I was hoping that
6 question was for Mr. Goudge and not for me, Mr.
7 Commissioner.

8 THE COMMISSIONER: I think
9 it says a million dollars, does anybody have the
10 guidelines? I wonder if we could just --

11 MR. GOUDGE: I had the
12 guidelines, but I hadn't---

13 THE COMMISSIONER: Oh.

14 MR. GOUDGE: Mr. Carter
15 had diverted my attention.

16 THE COMMISSIONER: The pipeline
17 guidelines say something about a bond. While we are
18 on these regulations we might as well take a look at the
19 guidelines.

20 MR. GOUDGE: The guidelines
21 provide, sir, at page four, that there will be two
22 general undertakings in each agreement or contract, one,
23 that the applicant be required to post a performance
24 bond respecting the execution of contractual undertakings.
25 I can't see any amounts specified, sir.

26 There is simply the form that
27 the bond is to take and there are three alternatives:
28 a promisory note guaranteed by a chartered bank,
29 certified cheque or bearer bonds. That is at page
30 4, and page 5 of the guidelines.

1 I can't recall whether else-
2 where in the guidelines there is a specification as
3 to amount. No, I am almost sure there is not.

4 THE COMMISSIONER: So the
5 guidelines say that there will be a bond posted by
6 the pipeline company. The existing land use regulations
7 say that there must be a deposit not exceeding
8 \$100,000 computed at a rate not exceeding \$1,000 per
9 acre.

10 So, you are wondering
11 whether that provision in the existing regulations
12 would be adequate if it were to be applied to the
13 pipeline project. I don't suppose Arctic Gas or
14 Foothills would urge that a \$100,000 bond would be
15 adequate in any way.

16 MR. BAYLY: Well, sir, I think
17 this line of questioning proceeds on the assumption
18 that there would be one land use application for the
19 entire project which is something that I can't con-
20 ceive and I believe the feeling is that there would
21 be many applications.

22 THE COMMISSIONER: Do you
23 have any comment on that?

24 MR. MARSHALL: Well, sir, I am
25 not sure that that follows. I thought Mr. Bayly was
26 getting to the point of the \$1,000 per acre and was
27 multiplying the acreage requirements by that. I
28 gather the witness just has no opinion on it.

29 THE COMMISSIONER: Yes, well,
30 I am not pressing the witness anyway at this time. I

1 just want to make sure I understand the framework in
2 which the question is being put. If you multiply
3 a thousand by the acreage involved in this project,
4 what figure do you get? Have you gone so far as to
5 carry out that calculation?

6 MR. BAYLY: No, sir, but I
7 am just doing it now.

8 THE COMMISSIONER: Somebody said
9 42 million, what is that, acres, dollars or what?

10 MR. BAYLY: We are assuming that
11 I believe that it is 40 square miles.

12 MR. GOUDGE: It is a string
13 on a football field, Mr. Commissioner.

14 THE COMMISSIONER: A string
15 underneath a football field.

16 MR. BAYLY: Yes, it is just
17 over \$25 million.

18 THE COMMISSIONER: Well, you
19 have got it up from 100,000 to 25 million, and it
20 is only ten after three.

21
22 (LAUGHTER)

23 MR. BAYLY: I should be an
24 auctioneer, not a lawyer, sir.

25 THE COMMISSIONER: Well,
26 carry on.

27 MR. BAYLY: If I could go to
28 another area of security deposits, Mr. Longlitz, and this
29 is not in the realm of opinion, but perhaps in the
30 realm of history.

1 Q Have there been occasions
2 when a bond put up by an operator has had to be
3 forfeited in your experience?

4 A No, I don't recall that
5 we had to forfeit them. It is usually when there
6 is a bond taken out they would get right with it
7 and get the job done and they get their money back.

8 THE COMMISSIONER: These
9 bonding provisions then, as described in Section
10 26 of the regulations have so far been adequate, so
11 far as you are concerned, is that right?

12 A Yes.
13 That is right, yes.

14 MR. BAYLY: Q Have there been
15 occasions, Mr. Longlitz, where 26, sub-section 5
16 has been used where only part of the security deposit
17 has been refunded to the operator?

18 A No, I believe the whole
19 deposit has been held rather than refund part of the
20 deposit.

21 Q And I gather that is
22 the Pointed Mountain experience, is it not, that the
23 bond is still being held pending compliance with
24 certain things that the Department is not happy with?

25 A That is a lands management
26 matter which is different from land use. I am not
27 aware of --

28 Q It is not something
29 you are acquainted with.

30 A No, I am not acquainted

1 with that, no.

2 Q All right. Now, if an
3 operator damages the terrain and you have shown us some
4 slides in which terrain damage occurred. I take it
5 then that you withhold his bond until adequate measures
6 have been taken to clean up and then when you are
7 satisfied you release the bond, is that correct?

8 A Yes, we would hold the
9 permit open. We would not close our files until
10 such time as we had found that satisfactory restoration
11 measures had been taken.

12 Q So, you haven't run,
13 into a situation where an operator has done everything
14 possible to clean up or to fix up, say, an erosion
15 problem, but it hasn't been adequate to put it back
16 the way it was before in which you have withheld some
17 of the bond because there was still damage?

18 A I can't recall one at
19 this time that's been that circumstances.

20 Q All right, you have run
21 into circumstances though where even though an operator
22 has done all the repairs he can, it isn't totally
23 repaired?

24 A Well, like security
25 deposits are not a general rule and I don't think you
26 could refer to every land use permit as having a
27 security deposit on it, so that in that sense you
28 are talking about two different areas, one where there
29 was no security deposit and one where there was a
30 security deposit and I am not aware of any in the

1 security deposit range in that kind of situation.

2 Q All right, and it is
3 your job, is it not, Mr. Longlitz, to decide who has
4 to put up a bond? As the engineer.

5 A Yes.

6 Q Right, and --

7 A I should say in consul-
8 tation with the rest of my people.

9 Q Of course, I understand
10 that, but nonetheless, you and your people decide this,
11 what criteria do you use to decide this?

12 A Well, again I would
13 caution myself a little bit because this possibly
14 impinges on the department's policy type of thing.

15 Q I am not asking you to
16 comment on the policy, I am just asking you what you
17 do, Mr. Longlitz. Surely, when Fly By Night Mines
18 comes along and asks you whether they have to put up
19 a deposit or not you have to look at them and figure
20 out some basis for deciding whether they put up a
21 deposit.

22 A Well, there are a lot of
23 criteria that you have to take into consideration.
24 You mentioned a new operator or, as you say, a fly
25 by night operator, even if he has had some experience
26 with this would be another instance. I think, and
27 depending on the area concerned. If you are in a
28 very critical area that could be susceptible to a lot
29 of erosion problems you are going to think about possibly
30 a security deposit on that particular area.

1 It may even be, I would think you could even go as
2 far as the kind of personalities in the company and
3 relation to the co-operation you are going to get
4 from them.

5 Q All right, would it be
6 fair to say that you don't have a check list that
7 you go through to find out whether you ask for a
8 bond or not, but you take into consideration the number
9 of things and experience of your office in whether
10 you will exercise this discretion?

11 A Yes.

12 Q Now, is that totally
13 it or do you get asked by the people higher up than
14 you sometimes to either ask for a deposit or not to
15 ask for a deposit?

16 A I think in the short
17 time that I have been in the position I have not
18 been, or I don't recall anybody ever asking from
19 above.

20 Q So it has been in the
21 six months that you have been in this position, you
22 and your staff's decision as to whether to ask for a
23 bond or not?
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D. Longlitz
Cross-Exam by Bayly

1 A Yes. I don't say that
2 wouldn't come from above, thank you.

3 Q But so far it hasn't.

4 A No.

5 Q And if we go to Section
6 31 that deals with the default of the operator, I gather
7 that is reserved for those occasions when you have a
8 particularly unco-operative operator or incapable opera-
9 tor who can't clean up and you have to do it, or some-
10 body in the government has to be employed cleaning up
11 after an operator.

12 A That section specifically
13 refers to Part I of the regulations, and not Part II.
14 It does refer to it in the sense that default or
15 contravention, I believe -- no it refers specifically
16 to Part I of the regulations. Part I was -- is outside
17 the land management zone, and that was put in there
18 for that.

19 Q All right, so you're
20 saying that you do deal with that, or you don't?

21 A Yes, that's specific
22 to Part I, yes.

23 Q Right, so you deal with
24 that in Section 7 dealing with a water crossing, if
25 somebody left a great deal of debris in a water
26 crossing and they wouldn't take it out, you would have
27 to make sure that somebody took it out, and that would
28 cost some money.

29 A Right.

Q And if it cost some money

D. Longlitz
Cross-Exam by Bayly

1 then you would be able to invoke the provisions in
2 Section 31.

3 A Yes, that's right.
4 Section 31.

5 Q All right, if you had a
6 bond, would you recover them from the bond, do you
7 think? Is that where you'd look first?

8 A Yes, I would expect that
9 that would be the logical choice, if the operator
10 didn't want to come through and do it himself, yes.

11 Q You would, as you generally
12 do, approach the operator first and ask him to correct.

13 A yes, that's right. The
14 onus is on him.

15 Q Now, if we could refer
16 Schedule "C" of the regulations, which is the permit
17 form, that is the application form. You stated that
18 one of the -- that's right on the back of the regula-
19 tions -- you stated that one of the problems that has
20 caused your office to dismiss applications, or to
21 reject applications, has been that insufficient material
22 has been provided in the application for a permit, is that
23 correct?

24 A Yes.

25 Q Did that have anything
26 to do with the form itself not providing guide-lines
27 for the kind of information that your office requires?

28 A No, I wouldn't -- I don't
29 think that in my past experience here, what basically
we found is just incomplete details as to how the

D. Longlitz
C ross-Exam by Bayly

1 operation was going to be carried out, and that under
2 Section 3 there is, attach a description of the
3 proposed method and technique, which is very broad,
4 and you know, as I say it leaves a little bit of room
5 there. Being this form used is universal for a number
6 of different types of operations and that, you couldn't
7 be specific I don't think.

8 Q Generally do operators
9 come into your office and say, "I want to apply for
10 a permit. What sorts of things do you want to know?"
11 Or do they do it themselves and you either accept it
12 or ask them details before accepting it?

13 A I think that's very hard
14 to -- not as a general rule. If there is a specific
15 application that the company is concerned about, and
16 they want to make sure that things are carried out,
17 and everything meets with what our thinking is, they
18 will arrange a meeting with our office to discuss
19 the application in full. A smaller operator may not.
20 He may just send in an application.

21 Q Do you inspect the site
22 before granting applications in all cases?

23 A This is up to our people
24 in the field. They will either request a pre-inspection
25 or they may not. If they've been in the area just two
26 days before, they may not bother, it depends again on the
27 type of operation. There's quite a few factors there.
28 Again, you can only do it if you're out there in the
29 area where the operation will take place and you have
a good idea of terrain and everything else.

D. Longlitz
Cross-Exam by Bayly

Q Now, one of the things that I requested that you bring along with you is the thing called a non-land use permit. Do you have a non-land use permit here?

A No, I guess I forgot to bring it.

Q Will you explain to the Commission, please, what a non-land use permit is?

A Well, it has no legal basis. It's basically for information, co-operation with operators who are going out, basically all it consists of is, we'd like to know where an operation is going on, what they're doing there and this type of thing, and we will then give them a letter of acknowledgment and this type of thing, stating what conditions we would put into a permit; it gives them some guidance in trying to achieve some kind of a uniform pattern for all operations in the north, not just ones that are land use operations, and that's the basic thing behind it. It's just something that, you know, it's a way of helping the operators along and this kind of thing.

THE COMMISSIONER: What type of operation would a non-land use operation apply to?

A One that doesn't fit the definition inside the front cover here.

Q Can you think of one?

A A small, say a survey party or something like this, just out for a short period of time on a program or something like this.

D. Longlitz
Cross-Exam by Bayly

1 They're going to set up a fuel cache, something along
2 this line, a small camp. It would not be classified as
3 a land use operation, the magnitude isn't there.

4 MR. BAYLY: It's a way of
Land Use
5 expanding the/permit system, even though the regulations
6 don't provide for it, because there are areas that the
7 regulations don't cover.

8 A No, I think that it's more
9 -- it doesn't have a legal basis so therefore you
10 wouldn't be expanding your regulations, I don't believe.
11 I think that you would be more or less it is a general
12 concern of the public that they want to do a good job
13 they want to go to the people to tell them what's --
14 what they're doing and their operation relates to, so
15 they give us the information on it and we can help them
16 along.

17 Q Do you mean by that that
18 it's a dry run of an application?

19 THE COMMISSIONER:
No, no. It doesn't
20 fall within the definition of land use operation under
21 the interpretation section of the regulations so an
22 operator seeking some kind of guide-lines but under
23 no legal compulsion has them prepare the land use permit,
24 they would impose upon him if he were subject to them.
25 Are you getting at something here that I don't follow?
26 Because it seems to me that this arrangement the
27 department has with the people who aren't subject to
the regulations is plain enough.

MR. BAYLY: All right, Mr.
Commissioner, I realize the arrangement they have, and

D. Longlitz
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1 I have been approaching Mr. Longlitz with the idea of
2 finding out from him whether he intends to expand the
3 ambit of the regulations to do this, in other words
4 if things aren't covered in the regulations, I would
5 like to elicit from him an opinion as to whether they
6 would be things covered in the regulations that are
7 not presently covered. I haven't got to that question
8 yet, but --

9
10 THE COMMISSIONER: Maybe there
11 should be operations covered, yes.

12 Well, all right, carry on.

13 MR. BAYLY: Perhaps you could
14 comment on that particular question that I suggested to
15 the Commissioner I would be asking.

16 Q Tell us whether you feel
17 that there are operations that should be contained in
18 the regulations that are not?

19 A Well, I think that
20 probably this is a coming thing. They are working now
21 towards some amendments to these particular regulations
22 which you know, would indicate, you know, that we'd
23 like to give broader coverage. I think that that's
24 -- that would be almost evident that we would like to
25 work towards something like that, a little more
26 broader coverage and things along that line.

27 Q So if I were to suggest
28 to you that the non-land use act application fills a
29 needed gap or a needed role, would you agree with me
that at present with the regulations as they are?

A Within limits. You don't

D. Longlitz
Cross-Exam by Bayly

1 want to extend that too broad. I wouldn't want to have
2 to give a camper permission to go out. This is what you
3 get into when you get too broad. They give fairly good
4 coverage now. You have to be careful that you aren't
5 picking up everybody when they take their family out for
6 a weekend, and in some instances it gets close to that
7 now.

8
9 Q I can see I shouldn't plan
10 any canoe trips with more than four canoes.

11 THE COMMISSIONER: And no more
12 than 50 pounds of explosives.

13 A That's for fishing, is it?

14 (LAUGHTER)

15 MR. BAYLY: Q Now, referring to
16 the permit itself that gets granted by your office,
17 Section 21 of the regulations covers a number of things
18 which you as an engineer may include in any land use
19 permit. Is it your policy to try and consider all
20 those matters that relate and make regulations in the
21 permit for all of them?

22 A No, I have quite an
23 administrative staff who work on this, plus there is
24 a direct feed right from the field level into these
25 things.

1 Q All right, I am perhaps
2 confusing things by saying "you" in particular, but
3 your office looks at everything in 21.1.A to
4 K in each application to see whether it applies and
5 make some sort of provision in the permit for it
6 if it does?

7 A Yes, and there is also
8 liaison, a liaison group with the other departments
9 which is not in our group as well.

10 Q All right, you'd have
11 to, for example, have some sort of contact with the
12 Fisheries Department under Section 7 because there
13 appears to be a jurisdiction there over water crossings
14 and fish.

15 A Yes.

16 Q Now, do you have standard
17 things that you put into the permits? Standard clauses?

18 A Yes, there are to a
19 degree, yes. There are also special conditions as
20 well.

21 Q Okay, to what sort of
22 degree have you standardized the matter of land use
23 permits? Let's take an example, if I wanted a land
24 use permit in the Inuvik area, and I wanted to know
25 start up and shut down dates, I assume that those
26 are pretty standard?

27 A They would be -- yes,
28 again, that would be -- there is a clause that we put,
29 that we put in the permits that says, you know, it shall
30 be during the time frame designated within the permit

1 and that is all. So in that sense, right, you would
2 base it individually on the area and to a degree those
3 conditions would be standard. There are a number
4 of them, the garbage control clauses, things like that
5 would be standard because they apply to every operation.

6 Q All right, would that
7 apply as well to type and size of equipment in
8 certain broad areas?

9 A That gets back to your
10 application and things along this line. They've in-
11 dicated each application is rated separately and
12 each operation has different sets of equipment, and
13 this kind of thing and this is looked at in the making
14 of the permits, so that not necessarily could you say
15 that you could put that condition in as a standard
16 one because some could be using straight roll-ons
17 where others are using various different things.

18 Q All right, but you could
19 get to the extent of saying, well, if they are going
20 to use a Caterpillar Tractor, they have got to use
21 those special mushroom shoes in this area.

22 A Yes.

23 Q That is a standard
24 requirement of your office --

25 A Yes, mm-hmm.

26 THE COMMISSIONER: Well,
27 maybe we should adjourn for coffee.

28 Mr. Templeton, I don't know
29 how these things happen, but there is a folder here
30 that appears to belong to Dr. Bliss.

I will

1 give it to you in a moment.

2 Mr. Goudge, what do you
3 propose, that we should sit this afternoon and not
4 sit this evening or what?

5 MR. GOUDGE: Yes, I would
6 propose that, sir, and that we begin tomorrow morning
7 and sit tomorrow morning and tomorrow afternoon and
8 I understand there is a community hearing tomorrow
9 evening.

10 THE COMMISSIONER: And the
11 following evening.

12 MR. GOUDGE: And the
13 following evening, yes.

14 THE COMMISSIONER: All right,
15 well, I have been handed a note saying the World
16 Series starts at six tonight, and --

17 MR. BAYLY: I will try and
18 be finished by then, Mr. Commissioner.

19 THE COMMISSIONER: So with
20 so many veterens of the Inquiry softball team here,
21 I guess we should stop by six. Can we have coffee
22 now?

23 THE SECRETARY: Yes.

24 THE COMMISSIONER: Well, we
25 will stop for a few minutes then.

26 (PROCEEDINGS ADJOURNED)
27
28
29
30

D. Longlitz
Cross-Exam by Bayly

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. BAYLY: Q Mr. Longlitz, when you issue a permit do you give instructions for every contemplated activity contained in the application if an application outlines a number of things that the operator would like to do, do you give instructions for each one, or are there some that are so standard that you don't mention them?

A To a degree, there is a number operations which, you know, they are basically the same, so a lot of the conditions you put in will apply to that particular operation, yes. As I -- the way it breaks down is you judge each particular phase and then you put your conditions accordingly in, whether there are special conditions required, and if a special condition is put in, it applies to the entire operation and in that way then you cover the whole operation.

Q And who is in charge of ensuring that for operations that are covered by other government departments, that permits have been applied for? For example, water use permits, or fisheries permits under Section 33 of the Fisheries Act, do you give your permit only when those things have been applied for and granted, or would you give those prior to the granting of approval by other agencies?

A There is a simultaneous issue of permits where permits are required.

Q How do you co-ordinate that?

A Well, all our applications

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Cross-Exam by Bayly

1 work with that agency as well. I think -- I'm thinking
2 now in specifics of the Canadian Wildlife Service who get copies
3 of our applications, and if it's in a bird sanctuary
4 where a bird sanctuary permit is required, the permit
5 is issued simultaneously with ours.

6 Q Do they issue it or do
7 they send it onto you to issue?

8 A They issue it, with a copy
9 to us.

10 Q Do you run into situations
11 where they don't want to issue and you do, or vice versa?

12 A I don't recall an operation
13 -- usually I think that basically the information is
14 what we're looking at in trying to determine on an
15 application what's going to go on. Usually it's worked
16 out in that sense. I don't recall one like that.

17 Q You're not aware that
18 there has been one. Is there any way of checking that?

19 A I suppose if you went
20 back and went through every permit and looked to see
21 if there was any comments on the two, you know, between
22 the two, you probably could do it; but it would be a
23 monstrous task.

24 Q I gather, though, you'd
25 only have to say in this example, look at permits that
26 had been issued in say bird sanctuaries to find out
27 whether you and Canadian Wildlife Service had a differ-
ence of opinion.

A Well, they pass comments
on all operations. I was thinking more generally.

D. Longlitz
Cross-Exam by Bayly

1 Q All right, so it would
2 be possible, but as you say it would be very difficult
3 and you'd want me to refer to a specific example.

4 A Yes, and then if I knew
5 it, yes.

6 Q All right, I won't do
7 that today but I do have Mr. Goudge saying that you'll
8 come back in Phase 5 of the Inquiry, and I may be able
9 to do it at that time.

10 MR. GOUDGE: We are quite
11 prepared to have Mr. Longlitz return at a later phase,
12 if Mr. Bayly requires it.

13 THE COMMISSIONER: Phase 5.

14 MR. HOLLINGWORTH: That's
15 Phase 5, Mr. Goudge .

16 MR. GOUDGE: Well, I hesitated
17 to use Phase 5, Mr. Commissioner. We will be asking you
18 to hear some evidence at some stage on regulatory matters.
19 At that stage we would be glad to produce Mr. Longlitz
20 again.

21 MR. BAYLY: I didn't mean to
22 panic the Inquiry, Mr. Commissioner.

23 Q Now, in Section 23 of the
24 regulations there is a provision for progress reports,
25 and progress reports must be submitted to you as the
26 engineer in a form that's satisfactory to you. What
27 sort of guidelines do you give to permit-holders con-
28 cerning progress reports and what should be in them ?

29 A Well, firstly, in going
30 this route with our own system of reporting, and our

D. Longlitz
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1 own inspection service, we can do it, you know, much
2 faster and more aware of the program than a report
3 such as this would come in and I think that if whatever,
4 you know, we're interested in the status of an operation
5 and how far they are down the line type of thing on
6 their operation, what phase they're at and this kind of
7 thing, would be the kind of information that would come
8 in on that.

9
10 Q Do you send them a form to
11 fill out, or do they just fill it out in their own way?

12 A They just give us a report
13 on what they're doing. I would say this, that we have
14 found that our own operations give us a much quicker
15 detail as to what is going on, and therefore we don't
16 pursue this or I don't pursue this too far.

17 Q So there are permit holders
18 who don't put in this report because your staff is doing
19 their inspections regularly in any event.

20 A Yes.

21 Q Now if I could refer to
22 your evidence, and if we can turn to the transcript,
23 Volume 70, page 10541.
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A There is also another

D. Longlitz
Cross-Exam by Bayly

1 input, I should say, that our own people who have
2 been in the area for some period of time, they are
3 also familiar with the operation and it helps along
4 that line. As far as the time period, I couldn't
5 really say, in my experience I haven't known that we
6 haven't gotten a response back in a particular area.
7 It's just lately, you know, some of the things have
8 come back and there has always been a response back on
9 it and I don't really know on that actually.

10 Q No. One of the reasons
11 I asked this, Mr. Longlitz, is there was a complaint
12 made, I believe it was in the community hearing in
13 Aklavik that land use permits and one in particular
14 had been applied for and comments had been asked for
15 by the Hamlet Council of that community and they
16 had received the correspondence from, I assume, your
17 office, asking for their comments after the date, after
18 the final date when their comments could come in. Is
19 that a problem you run into with communities, especially
20 those that may not have the regular mail service that
21 we would like to think we have in other areas of the
22 country?

23 MR. GOUDGE: Until next
24 week, Mr. Commissioner.

25 A I think that hinges a lot
26 -- there's a number of things, not only the mail
27 service, it's meetings that can be arranged within
28 the communities, there's a lot of things taken.
29 I should say that there has also been some reference,
30 in proposed amendments to expanding the time frame for

1 issuance. I think you are probably aware of that as
2 well, and it has, I think that that probably is maybe
3 what you are referring to. There is concern at this
4 time on it.

5 Q This is a problem that
6 has got back to your office though, that people have
7 been concerned they haven't had time to respond or
8 the time has been so short they couldn't get a meeting
9 together.

10 A Yes, I would say
11 along that line, yes.

12 THE COMMISSIONER: Well, I
13 should say for your assistance, Mr. Longlitz, that it
14 is a complaint that the Inquiry has heard in virtually
15 every community the Inquiry has been to in the Macken-
16 zie Valley and that is the complaint has been either
17 that the permit or the application was not sent to
18 the community in time for there to be any meaningful
19 comment made upon it or that the permit was issued
20 and comments sought on the application after the permit
21 was issued. Those are typical complaints. I am not
22 saying that you are responsible, but since the matter
23 has come up and since I know you are interested in it
24 and concerned about it, those are the types of complaint
25 we have heard virtually everywhere.

26 That's just offered by way of
27 assistance to Mr. Longlitz and that doesn't have to be
pursued at this, it is certainly not --

MR. BAYLY: Yes, I believe
Mr. Longlitz has said that this feedback has been

1 coming to his office for some time and I gather it has
2 come from places other than Aklavik or places in
3 addition to Aklavik.

4 A Yes, again we have also
5 been working at systems to upgrade, you know, to even
6 give further response times within our time limits.

7 I think I would have to look at specific cases
8 and check files and the rest of it to, you know, to
9 be -- to give you specific details as to whether
10 there was a problem there or whether there is a mis-
11 understanding or whatever.

12 Q Now, I will come back
13 to that area in a little while. I would like to refer
14 to two pages in the transcript, 10542 to begin with in
15 which you have talked about difficulties arising
16 out of operators inexperience or negligence and un-
17 foreseen difficulties, and again at 10544, this is
18 where you were showing slides, by the way, where you
19 have dealt with negligence on the part of operators,
20 and it brings me to the question of prosecutions under
21 the Territorial Lands Act and as a result of the
22 activities that you showed in the slides, would you
23 be able to inform the Inquiry of whether any of
24 those activities, especially the one in which the
25 operator departed from the roadway and went off away
26 from it for no apparent reason, whether any prosecution
27 arose from that situation.

28 A Well, firstly I haven't
29 looked at any of the pictures with that in mind. It
30 is a little hard now just to pick off the cuff here

1 whether or not --

2 Q All right, let's go at
3 it --

4 A The specific one I am
5 sure or I am certain it was not at that time because
6 again there was a minimal disturbance, it was on a
7 snowpacked road, or a snow packed area and we could
8 you know, this is part of the basis of what you have
9 when you want to prosecute somebody, you would certainly
10 have to look at what you are working with as a sound
11 basis for prosecution.
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D. Longlitz
Cross-Exam by Bayly

1 Q Let's go at it then from
2 another direction. With regard to prosecutions in gen-
3 eral, now the land use regulations have been in force
4 for approximately four years. Can you tell me how
5 many prosecutions that there have been under these
6 regulations in that period of time?

7 A I think there's approxi-
8 mately 10 or 12 of them.

9 Q And that is in the total
10 four years, 10 or 12?

11 A Yes. I should probably
12 also say that the prosecutions are, you know, you have
13 to consider a prosecution as an ultimate failure, and
14 that the more preferred manner is through Section 32
15 and suspension. It is far more costly to an operator
16 to have his operation suspended than it is to prosecute
17 him. That's the route to go here, and you get much
18 quicker action. As you know, legal cases tend to drag
19 out and there's a lot of paper work involved.

20 Q We do our best. Mr.
21 Longlitz, can I take it when you say that 10 or 12
22 prosecutions, and therefore failures, that they follow
23 suspensions? You don't prosecute until after you've
24 suspended.

25 A Either that, or in action,
26 on the part of an operator after a completed program.
27 There's various circumstances. I don't think you
28 could pin it down to one particular area.

29 Q Does that mean there
30 have only been 10 or 12 failures, in the four years --

D. Longlitz
Cross-Exam by Bayly

1 "failures" is your word that you've used -- in situations
2 that you could only cope with by means of prosecution?

3 A No, I think that your
4 suspension mechanism, you're going to deal with a lot
5 of failures and have corrective action taken.

6 Q All right. Now, were these
7 prosecutions generally against the companies or against
8 the individual operators of machinery?

9 A No, they are against the
10 permittee.

11 Q So it's always against --

12 A That's right.

13 Q -- the holder of the permit,
14 not against his employee.

15 A Yes.

16 Q All right, now in some of
17 the areas there appears to be a dual jurisdiction, that
18 is between you and fisheries. Section 7 refers to
19 that. Have there been prosecutions under Section 33
20 or for contravention of Section 33 of the Fisheries Act,
21 which could have been your prosecutions in your
22 department, but you decided to let the Fisheries --

23 A When you consider prose-
24 cutions, you want to look at the best Act that covers
25 the best situation.

26 Q Yes.

27 A And therefore it could
28 be one or the other. I don't think you can -- you know,
29 you want to make sure you're going to win your case,
30 you're going to go to work so you'll pick the best set

D. Longlitz
Cross-Exam by Bayly

1 of legislation that covers.

2 Q I realize, I'm just
3 trying to get a clear picture of how many failures there
4 have been that resulted in prosecution where it may have
5 been the decision for reasons of wanting to be success-
6 ful, of using a different Act or a different set of
7 regulations.

8 A I guess I can't really
9 comment on that.

10 Q So you don't know whether
11 the Fisheries Act has been prosecuted under for failure
12 to comply with Section 33 since the land use regulations
13 have been in force?

14 A Oh yes, I'm sure that they
15 have. I think there's a number of cases where they
16 have prosecuted under Section 33 of the Fisheries Act,
17 yes.

18 Q Now, how many of these
19 permittees are private companies and how many would, say,
20 be other government departments, or Crown corporations?

21 A I don't have that statistic
22 available. There's some 1100 or better permits.

23 THE COMMISSIONER: How many?

24 A 1,100, and it's a little
25 hard to break those down.

26 Q Outstanding at the moment
27 or --

28 A No, no. These have been
29 through the period of four years, so it's a little
30 hard to break them down. We don't have them broken

D. Longlitz
Cross-Exam by Bayly

1 down in that category.

2 MR. BAYLY: Q Do you have any
3 special policy about whether you prosecute other govern-
4 ment departments or Crown corporations?

5 A There's certain legislation
6 that covers government departments, and certain legisla-
7 tion that does not cover government departments, and
8 I believe these -- the Crown cannot prosecute the Crown.

9 Q You have run into situa-
10 tions where you have contemplated that, have you?

11 A No, it's in -- we may have
12 but we've also been looking in the context of proving
13 out what the legalities are of these regulations and
14 what areas we can expect to work on and expand
15 and this kind of thing. So it's come to question, and
16 there may have been occasions from time to time, yes.

17 THE COMMISSIONER: You say that
18 since these regulations came into force four years ago--
19 that's November 2nd, '71, apparently -- there have been
20 approximately 1,100 land use permits issued in the
21 Northwest Territories.

22 A Yes.

23 Q How many people do you have
24 employed in administering these regulations? That is
25 are you able to tell me how many people are in the
26 Land Use Branch, and how many of those are employed as
27 -- in an administrative way, that is not typing or
28 answering the phone, but people who are classified as
29 inspectors and so forth?

30 A I think a rough estimate

D. Longlitz
Cross-Exam by Bayly

1 would be some 40 to 45 people.

2 Q Altogether?

3 A Yes, this is scattered
4 throughout -- there is a section here and then they
5 may be head sections here and throughout the Northwest
6 Territories, yes.

7 Q And those people are
8 employed in terms of their job category, in adminis-
9 tration regulations.

10 A As to inspection and this
11 type of thing, yes.

12 Q Is that adequate at the
13 moment?

14 A Well, of course they're
15 talking now, there has been Gazetted the expansion to the
16 east here to include the rest of the Northwest Terri-
17 tories, so there's going to have to be -- it wouldn't
18 be adequate, no. We have to --

19 Q But leaving that aside.

20 A I think we're always
21 looking for more people. The more people you have,
22 the better you can get the job done.

23 MR. BAYLY: Q Now on the subject
24 again of prosecutions, have you prepared more prosecu-
25 tions than have been prosecuted? In other words it's
26 not always your discretion, I understand you prosecute
27 through the Crown attorney's office here in Yellowknife.

28 A Yes, we do, yes.

Q So have there been occa-
sions when the Crown attorney has declined to prosecute

D. Longlitz
Cross-Exam by Bayly

1 cases that you've prepared for prosecution?

2 A In fairness I think yes,
3 there would be a few of them, again based on the legal
4 end of it, we just didn't have the necessary evidence and
5 this kind of thing, which is a requirement to prosecute,
6 yes.

7 Q And how many of those
8 would there be?

9 A Again it's very hard to
10 figure because you may -- it gets into a thing where
11 you may drop one charge here and pick one up somewhere
12 else, and I have a hard time putting a figure on it.

13 Q Would it be as many as have
14 been prosecuted, the approximate 11 or 12, or more than
15 that?

16 A I really couldn't tell
17 you that.

18 Q Are those statistics that
19 you keep in your office, or are they something that
20 you'd have to dig through every permit for?

21 A We'd have to dig through
22 them, yes.

23 Q Now, if I can refer you
24 to your evidence at 10558, starting at line 3, no
25 hurry --

26 A O.K.

27 Q -- you refer in that to
28 rough dates that have been set in three regions for
shutting down operations. Now, can you make those dates
any less rough? Can you give me over the period of time

D. Longlitz
CrossExam by Bayly

1 that the land use regulations have been in operation ,
2 the actual shutdown dates that you gave us, particularly
3 for the Inuvik area?

4 A Yes, I'll give you an
5 example of say last year which covers from Norman Wells
6 north. We had 64 degrees to 67, it was April 18th, 67 to
7 69 was April 25th, and there was 69 to the Beaufort and
8 Islands May 3rd, and 67 degrees to Beaufort and Islands
9 May 2nd. Oh, that was in '73, pardon me. I shouldn't
10 read this, thing. '75, pardon me in 1975 from 64 degrees
11 to 67 was April 18th. In 1974 --

12 Q I'm sorry, do you think
13 you could go through these dates a little more slowly
14 because I'd kind of like to make notes, and I'm a poor --

15 A O.K., I'll start again.
16 From 1975 from 64 degrees to 67 degrees.

17 THE COMMISSONER: Sorry, you're
18 going a little fast there. Just start over and we've
19 got lots of time.

20 A O.K., the 48-hour shutdown
21 notices became effective midnight of the dates below.

22 Q Right.

23 A In 1975, from the 64 de-
24 grees to 67 degrees we had an April 18th shutdown date.
25 In 1974 for instance on Banks Island we had an April
26 30th shutdown date. In '74 from 67 degrees to 69
27 degrees at April 25th, and from 69 degrees to the
28 Beaufort in '74 was May 3rd. Then in 1973 from 67 to
29 Beaufort^{and}/Islands was May 2nd; and in 1972 from 67
degrees to 68 degrees, 30 minutes it was April 27th.

D. Longlitz
Cross-Exam by Bayly

1 MR. BAYLY: Q How do you
2 determine these/^amonth in advance, which I gather from
3 your answers to Mr. Templeton's questions you do?
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1 A Well, we'll give them
2 notice of a general statement and say that you know
3 it is around April 25th or something like this, we
4 anticipate shutdown date will be coming on and this
5 is a target date for tentative plans and this type
6 of thing and this goes out to the companies, all the
7 companies working in that particular area at the
8 time and then when that deadline comes around our
9 field people will then keep in close contact with the
10 operators and their head offices, by telex mainly, which
11 is pretty fast communication and work it on a day to
12 day basis, looking at the number of concerns that
13 you look at in that kind of situation.

14 Q Well, when you say that
15 they are in constant contact I gather that the operation
16 say, around the April 25th example date you gave is
17 still going on.

18 A Yes.

19 Q All right, so say you
20 have a cold snap, do you get applications for an
21 extension?

22 A Well, it is not such a
23 thing as an application for extension. The permit
24 may be outstanding, it may be on April, it may read
25 April 15th, but there is a clause in the permit that
26 will be specific as to overland travel of vehicles and
27 that is the clause that we are looking at and we will
28 project this date on a 48-hour notice type of
29 thing by a field for that time forward, that is how
30 you would govern the operation.

1 Q At what point do you
2 give this 48-hour notice? Is that 48 hours before the
3 say, the surface of the snow road will disappear or --

4 A No, no, it is given
5 on the basis of what the people are looking at in
6 the field. If you have got a snow cover on the road
7 you may be okay, if you don't have any snow cover,
8 you get into surface disturbance and this, and it is
9 based actually on looking at the individual operation
10 and seeing how they are progressing. They may have
11 a very well snow packed road which would allow them
12 to operate on that snow pack. They may not have it
13 the other hand. One of the things that I have pointed
14 out in the slides was where you do have vehicle
15 traffic on a road it tends to change the colour of
16 the snow and that attracts more heat and naturally
17 the snow melts off it and then you are into a situation
18 where a quicker shut down will come into effect.

19 Q So it may be if there
20 is any damage done under those kinds of shut down
21 circumstances that the damage may be caused by the
22 judgment call, if you like, of your inspector rather
23 than an act of the operator?

24 A I would also think that
25 an operator who is operating under a permit is respon-
26 sible until he gets a final report of disturbance and
27 therefore he doesn't want to get himself into a situation
28 where he is going to have to come back and do restoration
29 and fly in helicopters and the rest of it for a period
30 of years extending beyond that time, so he's a little

1 overly cautious in that sense because it is very
2 expensive at least when helicopters have to go in and
3 do restoration measures and this kind of thing which
4 will be a requirement if he does operate beyond that
5 date.

6 Q Well, is your experience
7 that the operator will want to get out even earlier
8 than the inspector will require it?

9 A Yes, there are a number
10 of them that plan that way. They automatically pick
11 a date and preferably the date that we give them to
12 a degree and then they will be completed in that
13 operation. There will be only minor, finer details
14 that they are cleaning up on at that time.

15 Q So you don't run into
16 the situation then where the operator comes and
17 asks if he can have an additional two or three
18 days?

19 A Very seldom now.

20 Q And if that is the
21 case, what sort of stipulations do you put on that
22 sort of an application?

23 A I think one of the things
24 would be that the machinery to be shut down on the
25 spot.

26 Q That it wouldn't be taken
27 out over land?

28 A No, it would have to
29 remain there the full period of the summer and this
30 would give them a little concern too.

1 Q Yes, and that is something
2 that has happened, is it?

3 A Yes.

4 Q Mr. Longlitz, is your
5 office involved in studies or plans for developing
6 some sort of machinery to monitor the pipeline?

7 A No.

8 Q Do you have any opinions
9 of your own about whether your office as presently
10 constituted would be able to cope with a project of
11 that size or would it have to be modified or expanded?

12 A I am not, as I say,
13 really in tune with the full magnitude of this operation
14 or anything and I think that rather I couldn't be
15 really accurate in saying whether we could handle
16 it or not. I would think offhand that you would have
17 to have more people, there is no doubt.

18 Q All right, would you say
19 that you and your staff are overworked at present?

20 A Well, we have got
21 enough to do, yes.

22 Q So any additional work
23 would require some sort of modification, would that
24 be fair to say?

25 A Yes, I believe so.

26 Q Yes.

27 A And are the things
28 that happen now in permits and assessing ecological
29 sensitivity, I think, as the regulations put it, that
30 you feel your office is inadequately prepared to deal

1 with at this point?

2 A Well, we recently had
3 an addition to our program now and we are in the
4 process now of seeing how well it can really function.
5 I would say, that there is in probably every growing
6 organization you run into that situation where you
7 should have more expertise and more staff to do the
8 job and we're expanding all the time so I think that --
9 we just had a recent expansion -- and I think that right
10 now it would be rather hard to comment however.

11 Q All right, so you don't
12 know at this point whether that will put you in a
13 position to be able to keep up with the various things
14 that are going on in your area?

15 A No, I would say we are
16 following them. It's to what degree you want to go to
17 I think is the thing. We are following them now, but
18 with the expansion of staff and that we may follow them
19 a little closer.

20 Q As the regulations have
21 now been in operation for four years can you comment
22 on whether they have in that period of time tightened
23 up operations or whether they have been effective in
24 stopping terrain damage as well as policing it?

25 A I would say yes to that.
26 In my experience with the operations, it's -- there's
27 quite a difference back in '71, say, when I first
28 came up here and now, from my own experience in seeing,
29 first of all, how the preplanning goes about, the
30 operators are getting into things and this kind of thing

1 which has really improved to a great degree I think.

2 Q Would you attribute
3 that to the enforcement of these regulations or to a
4 combination of that and added or additional expertise
5 on the part of the operators?

6 A I think both. As you
7 mentioned, I would think that it is both. Certainly
8 with regulations governing things like this the
9 regulations automatically, should I say preclude,
10 preplanning in order to fill out the application.
11 You are going to have to do some preplanning and that
12 is one of the things that has really helped, I think
13 in that sense.

14 Q All right, now, if we
15 could go to the procedures that you in fact go
16 through. Now, I have gone through part of the regulations
17 with you and a number of things have come up that
18 aren't specified in the regulations, one of those,
19 for example, is the community involvement. Can you
20 tell us the procedure, all the procedures that are
21 involved from the time an applicant makes his application
22 for a permit and the time when that permit is finally
23 granted, where does it go and does it go to the
24 same place all the time?

25 A There is a routine
26 procedure, yes. You have to have a routine procedure.
27 I think there is a very quick delivery to our field
28 people who can then go get the applications out to the
29 communities involved. That is one of the prime routines
30 that we go through. That means a duplication of all

1 information and this kind of thing, putting it together
2 We set time limits, yes, to work on, which are, in
3 order to get the application, first of all checked
4 for necessary information on it to see that it
5 does indeed say what the operator is going to do and
6 then once you've got that, and that can be done
7 relatively fast, then it is an immediate thing to
8 get it into the mail circuits to our various offices
9 and this kind of thing to get it out, to make sure
10 I think it is fair to say that in the past while here
11 we have been attempting to allow at least, or a
12 minimum of a two week period for community response
13 on it after the application is received. Probably
14 two going on to three weeks.

15 Q And we were discussing
16 that earlier and you're getting some feedback that
17 maybe in some instances that isn't enough.

18 Let me go over this with
19 you. First of all, you get the application in, you
20 duplicate it and you send it to your regional offices
21 and at the same time I gather you send it to the
22 hamlet councils of the community involved if that is
23 applicable --

24 A No.

25 Q No?

26 A We send it to our regional
27 -- our district office, they are not regional offices,
28 the district offices, and it goes direct from them to
29 the community. It may go by our inspectors who
30 happen to be in the area or it may go by the local

1 mail service or there may be, there'll be any mechanisms,
2 that's why it goes locally because as you mentioned,
3 the mail service is a little erratic and it is prefer-
4 able that it gets to their office and then they can
5 deal with it and if there is not a timeframe to
6 respond on the thing, you know, we want to know about
7 it right at that time so it gives us a better check
8 and a much closer working relationship with the
9 community in that sense.

10 Q So it goes to the
11 community either through the hands of the inspector
12 or the man in the district office --

13 A Yes.

14 Q Or through the mails and
15 I gather that they get together and make some comment
16 on it if they want to or no comment on it if they
17 don't want to ?

18 A That is right.

19 Q Then does it come back
20 directly back to you or does it come back through
21 the --

22 A It comes back to our
23 district office, the comments are made to the district
24 office and they will come back to us by telex.

25 Q And when you get them
26 back here, do these get fed into your Land Use Application
27 Committee?

28 A They are fed into us,
29 yes, to our people that are working on the Land Use
30 Application -- that specific land use application, yes.

1 Q So they get fed into your
2 staff office here?

3 A Yes.

4 Q Now, is this, you say
5 that you have to set up these procedures, are these
6 procedures followed in all permits?

7 A Yes, you couldn't operate
8 in any other way. You would find yourself in a
9 situation of applications being held over and lengthy
10 delays. There are a number of built in things in the
11 regulations that where a response back to a company
12 must be within a certain time frame if there is
13 insufficient information, so all these things have to
14 be taken into consideration the minute that you
15 receive that application.

D. Longlitz
Cross-Exam by Bayly

1 Q Yes, I understand that,
2 and what happens then or what would you speculate has
3 happened in those instances where perhaps a permit has
4 been granted and work has started prior to a community
5 receiving a letter saying, "Would you like to comment
6 on this application?" What's gone wrong?

7 A Well, I would say in a
8 situation like that, there may be a misunderstanding in
9 the application form which does go to the community.
10 There is a proposed startup date, there is some misin-
11 terpretation. I have seen this happen in the past where
12 the community will take that as the actual startup date
13 of the operation whether in fact a permit has been
14 issued or not. In lots of cases, or in all cases, the
15 company could not go ahead until they had their permit,
16 or they would be in violation of the regulations; and
17 even though we will get a company that wants to get in
18 and they get a little lack of pre-planning in there,
19 and they don't allow a 30-day response for us to react,
20 and therefore their dates would appear as their proposed
21 commencement dates/^{which}are not in fact when they can go
22 ahead at all. In most cases they do not go ahead
23 or they would be in violation of the regulations, and
24 this does cause some concern. It's a matter of communi-
25 cation, to a degree, I think.

26 Q So a community could
27 get an application by such and such a construction
28 company that they wanted to take some gravel out of a
29 borrow pit, starting on the 14th of October, which you
30 would just have sent on the 10th of October. You would

D. Longlitz
Cross-Exam by Bayly

1 say they can't start in any event until you give them
2 a permit, so that date doesn't apply; but the community
3 maybe confused by that."

4 A That's right, yes.

5 It's -- I know that that in fact has happened on a
6 number of cases and we are quite concerned about
7 operations like that. We try to get back to the
8 operator and say, "I'm sorry, there's no way you're
9 going to proceed on that basis. If you do you're in
10 trouble because it's one of the things --" The other
11 thing is if you don't give the lead time, you can't
12 possibly judge an operation properly unless you have
13 time to assess it.

14 Q Do the communities get
15 any communication from you by way of a letter saying
16 that this date doesn't apply, or do you just send them
17 the application form?

18 A They get a covering
19 letter does go out from our District Office with each
20 application, and it outlines the response time in it,
21 that we would like a comment back from them, and in most
22 of the districts there is a phone call goes back to the
23 community to check and see if indeed they have received
24 it, when indeed they are going to have a response, or
25 if there has been some concern shed, and this procedure
has been working, too.

Q Now, after it comes back
to your office, and presumably you've got some comments
from the community or from a Hamlet Council, the decision
then is made within your office, or it's made by you

D. Longlitz
Cross-Exam by Bayly

1 in consultation with other government departments?

2 A Depending on the problem,
3 yes. If it's, as I say, a reference to a game management
4 problem we will also work with the local game management
5 people here, or Wildlife Service.

6 Q Do you present to them
7 the input that the community has supplied you with, or
8 is that something that you use in your own assessment
9 prior to meeting with other government departments?

10 A I don't recall a situation
11 to my knowledge, you know, where we held it back. I
12 think that it's open to the other departments to assess
13 the thing and take a look at it.

14 Q without holding it back,
15 have there been occasions when you haven't put it
16 forward? In other words, occasions when they haven't
17 had the advantage of seeing that input prior to or
18 during the meeting that you have had with them?

19 A No, I think that you
20 would want to discuss that with them.

21 Q I quite agree.

22 A I can't think of any
23 situation where that would come about.

24 Q So in all instances, in
25 your experience, the land use input of the community has
26 gone through you to any other department that might be
27 concerned because of legislation that it administers?

28 A Right.

29 Q And who makes the final
30 decision? Is that one that you make, or again we're

D. Longlitz
Cross-Exam by Bayly

1 getting back into the dispute area, taking the example
2 of you and another department having a difference of
3 opinion as to whether permits should be granted?

4 A I'm trying to think of a
5 specific example. Basically I think that it's a matter
6 of substantiating what each one has, what each concerns
7 are, and I think I mentioned this earlier, once you
8 establish those things then you can either issue a
9 permit or modify the permit, and this kind of thing, and
10 that's basically what we work on on that basis, with the
11 other government departments. I don't know that there's
12 been a direct conflict, it's a matter of if you know
13 where there's a denning area or something like this
14 specifically and it can be avoided, well there's no
15 problem in working that in.

16 Q Who is it that decides
17 which other government departments will be consulted
18 before an application is granted?

19 A Well, we have a standard
20 routine with a number of the government agencies involved
21 which is a standard procedure as far as we're concerned
22 There's no -- we contact most of the parties that have
23 an interest in that particular program.

24 Q All right, who do you
25 contact?

26 A Well, there's the Wildlife
27 Service, the Game Management, the Fisheries, the Department
28 of Local Government there's various other groups, employ-
29 ment groups. If it happens to be on the border for
instance, the Yukon border, we go to the Yukon people.

D. Longlitz
Cross-Exam by Bayly

1 Our own people, of course, I think there is somewhere
2 in the neighborhood of 10 or 11, I forget.

3 Q And they make up the
4 Land Use Advisory Committee, do they?

5 A Yes.

6 Q Now, I gather that you
7 invite community comment prior to this meeting, not at
8 this meeting; is that true?

9 A Simultaneously.

10 Q Are they at the meeting?
11 Hamlet Council, for example?

12 A No the comments, you have
13 to work that out in advance through your mail system.

14 Q Yes.

15 A And as I say, our meetings
16 are more or less scheduled and the comments may not be
17 or they may be, depending on how soon the application
18 was in, this kind of thing.

19 Q They may not or may be
20 in at the time that you have your Advisory Committee
21 meeting.

22 A Yes.

23 Q And if they're not in,
24 you proceed without them.

25 A Well, there's no permit
26 issued, of course. We proceed with the Advisory Board's
27 meeting on that, yes.

28 Q So taking you back to an
29 answer you gave me earlier, there are instances where
30 that Land Use Advisory Committee would not have the

D. Longlitz
Cross-Exam by Bayly

1 benefit of the community's input because it wasn't in
2 yet.

3 A No, if there was concern
4 registered as far as those groups would be concerned,
5 just because there was a meeting isn't a final thing.
6 The final time comes right up until the permit is
7 actually issued, which could be sometime within, as I
8 say, our time response, of 30 days, say. So if we got
9 some comment which we referred back to one of the
10 members of the committee, or was in their area of
11 concern, it would be relayed back to them to have a
12 further discussion on it.

13 Q Would you have another
14 meeting them of everybody, or just one with that?

15 A No, probably more so with
16 the particular person that's got the expertise in that
17 particular area.

18 Q In this Land Use Advisory
19 Committee, how many is a quorum? For example, the
20 Fisheries aren't there, can you go ahead, or if the
21 Wildlife Service isn't there can you go ahead?

22 A Usually it's not worked
23 like a quorum. You're thinking of a council meeting.
24 It's based -- if they're not going to be there, they
25 usually submit their comments in writing, and on that
26 basis they make an effort to attend. We don't base it
27 on a quorum, we check to see that we have comments in
28 from the various people before the permit is issued
29 and if they don't happen to attend the meeting, then we
30 check with them to make sure we have their comments.

D. Longlitz
Cross-Exam by Bayly

1 Q And how often does this
2 meet? Does it meet just when it has permits to discuss,
3 or do you meet on a regular basis?

4 A We have a system of every
5 three weeks right now. It depends -- it may increase to
6 every two weeks if we get more applications.

7 Q At the moment though it's
8 every three weeks?

9 A Yes.

10 Q That is another question of
11 a policy on how to do things, how to organize the various
12 departments so that they discuss things with each other.
13 It's not provided in the regulations as I read them.
14 Would you agree with that, this Land Use Advisory
15 Committee?

16 A Yes,

17 Q And in point of fact,
18 although it doesn't happen, you could grant a land
19 use permit without referring to the land -- to the
20 Land Use Advisory Committee.

21 A Yes, if you, you know,
22 that could happen, that's true.

23 Q And does this, if you have
24 a meeting in which you have a number of applications,
25 does the Land Use Advisory Committee consider all the
26 applications?

27 A They consider each one,
28 yes, as we go through them they're organized into a
29 list, an agenda type of thing, and you go through them,
yes.

D. Longlitz
Cross-Exam by Bayly

Q All right. So even with the three-week provision, there wouldn't be a situation where an application came in that didn't make it to one of your three-week meetings.

A No, if you get into -- as I say, these applications are distributed to them and if they -- you know, you make sure you get your comments in. There may be a very small operation which they may not wish to comment on.

Q Now, I gather at these meetings you could have amendments made to the proposed permit that was to be granted, or rejection of a permit, or agreement by everybody that a permit should be granted on the terms that it had been drafted in.

A Yes, it's based on the recommendations of each party.

Q But there might also be situations where you would add or subtract something if somebody got their comments in late, either a community or one of the government departments.

A Yes, there have been changes at the last minute.

Q And those aren't necessarily made with the consultation of the whole committee, they are made sometimes as a result of written comments that come in afterwards.

A Right. There is a -- a lot of operations are standard, eh, you know, they're pretty well general in their pattern. It's only the very specific ones that you would really want a good session with everyone there.

D. Longlitz
Cross-Exam by Bayly

1 In addition to that, if there was a major change
2 to the proposal, it could be carried over because this
3 would be an addition to the permit application and
4 therefore we would probably hold for another 30
5 days on it and sit on it.

1 Q Now, when you get in
2 your community involvement I gather that the procedure
3 generally speaking is to go to the hamlet council or
4 I suppose in the case of a larger settlement like
5 Inuvik, the town council, to get your community
6 reaction, is that correct?

7 A Yes.

8 Q Although in some com-
9 munities like Tuktoyaktuk, you get most of your
10 community reaction from the Hunters and Trappers
11 Association.

12 A I believe that there is
13 some change recently. I am not quite familiar for
14 sure just what the latest change is. There was some
15 consideration there, yes. In the past most of the
16 comment came from the council itself, but it may
17 have been passed down, I am not sure on that.

18 Q All right, I understand
19 that the council did approach your office at
20 one point and say we don't want to consider any
21 applications outside our town boundaries and wish
22 those to be referred to the Hunters and Trappers
23 Association, is that how you recall the change as
24 you put it?

25 A I am not that aware of
26 that again, this is what our local people would deal,
27 you know talking with the people and seeing where the
28 best area could be met, you know, where best you
29 could meet the needs.

30 Q All right, now, is that

1 a decision at the local level that was made? In other
2 words, did each field officer say it should be the
3 hamlet council to which the applications are sent,
4 or was that a decision made at the regional level?

5 A As I say, I am not that
6 in tune with that particular situation that you
7 are referring to --

8 Q You keep looking back
9 here, I am just wondering if you had somebody back
10 here that could inform you of what had gone on with
11 that situation.

12 A No, I think -- it is
13 pretty hard, again, there may be discussions through
14 phone calls, verbal communication, etc., that goes
15 on, but it's very hard to be specific and say, well,
16 this decision was made here or this decision was made
17 there because we have telephones, desk copiers and
18 everything else in each one of our offices along with
19 telex and the rest of it, so communication, you know,
20 we work fairly closely as a unit. I couldn't
21 really say, it is hard to say where that decision
22 was really laid out.

23 Q Well, then your information
24 that comes from the community, that comes from the
25 district office, through the district office --

26 A Yes.

27 Q And they send you
28 telex.

29 A Mm-hmm.

30 Q Now, is that telex

something that contains the written comments of the hamlet council or is it a collection of those reactions including the comments of the hamlet council that the district office has been able to gather from the time that the application was sent to the community to the time that the telex was sent?

A In some cases a direct quote from the council motion. In some cases it may be just a phone call that has been relayed to them by the secretary-manager. It varies, it is not a uniform thing, so all you can do is report what is reported to you, and as I say, have received direct quotes on things too.

Q And have you received feedback as to whether this is the method that the communities themselves feel is a satisfactory way of their getting their information to you?

A Well, varying, I would say varying opinions, depending on who you end up talking to. Really, there is a number of varying opinions on that.

Q I gather there was an attempt made in the Delta again last year to have a joint advisory committee to your office and to the Land Use Advisory Committee in which all the communities reported to both. Is that correct?

Do you recall that?

A Yes, I am aware of the -- that was one group, was it, that you are referring

1 to?

2 Q Yes.

3 A Yes, I recall that,
4 yes.

5 Q All right, and that
6 for various reasons I gather, didn't happen, that
7 the applications are still directed, generally speaking
8 to the hamlet councils and the town councils, is that
9 correct?

10 A Yes, I believe that that's
11 what they refer back to the regular councils which
12 we had a working arrangement with. I think that on
13 that basis it was quite, again, as I say, a variance
14 of opinion on which way it should have gone, as I
15 say, maybe we are talking in the area of maybe policy.
16 In my own opinion I know that I heard various
17 comments both ways as to which way, you know, it should
18 go.

19 Q What is the perspective
20 of your office on what happened to that attempt to have
21 a regional advisory committee to the Land Use Advisory
Committee?

22 A Well, again, we will make
23 our distribution to our field people and I believe at
24 this time, if I am not mistaken, it is still going to
25 the council members.

26 Q All right, now is that
27 something that you direct them to do or is that
28 something that is within their discretion?

29 A Again, I would say that

1 it is a kind of a policy thing within the department
2 and they will discuss this by their verbal communication
3 back and forth, etc., and work out what seems to be
4 the best that would please the most people.

5 Q Well, did your office
6 have any role in recommending whether this method
7 should be tried, should be supported?

8 A I don't -- I can't
9 recall making specific demands or anything along that
10 line. My key concern, I know that what I was concerned
11 about was the fact that I wanted to make sure that
12 it was indeed getting to the communities and that
13 there was a chance, you know, for them to respond and
14 as adding another group in my own personal concern
15 was that you might have another group to go through
16 and I know what that is like.

17 Q All right, you felt it
18 was an additional group and might make things more
19 difficult, is that fair to say?

20 A Possibly, I again, am
21 not well versed in the whole pattern of things that
22 were developing and what their proposal was and the
23 rest of it, so I couldn't, I am just saying my own
24 personal opinion in that direction.

25 Q Okay, well, who knows
26 about those things in your office or in your
27 area office?

28 A Our local people would
29 know, yes.

30 Q So it was really something

1 A Yes.

2 Q You send it to both?

3 A There is no secrecy about
4 or anything about keeping an application. When there
5 is some doubt you send it to both.

6 Q All right, so this is
7 -- and you find that this is the most satisfactory
8 way, is just to send it to two communities when you
9 are in doubt?

10 A Yes, I think that if
11 you are looking at trying to get the best, you find
12 out who is in that area and you are not sure -- the
13 best thing is to make sure that you pick all the
14 people within that area.

15 Q In your opinion, would
16 it make sense for community representatives
17 to attend your Land Use Advisory Committee meetings
18 and discuss this the way the other members of this
19 committee do? I am not asking you for the policy.
20 I am just asking you because you are a person who
21 has been in the field as well as in the regional
22 office.

23 A It is an interesting
24 question you put in there. I would think that they
25 could attend. I can't see any reason, you know,
26 any problem against them attending. I think that
27 one of the things though that would be better is the
28 method to the councils where everybody has a chance,
29 more people are involved in it and get the application
30 out there rather than in an office there. I think that

1 is the only thing you might lose by having one indepen-
2 dent person come in, unless they are really very
3 knowledgeable of the whole area.

4 Q But what I am envisioning
5 Mr. Longlitz, is that the community has already had
6 a meeting, say, of its hamlet council at which it
7 has decided to make a motion but is willing to discuss
8 it. I am envisioning that they like the representative
9 of a government department might come to your meeting
10 to discuss the position that they wish to take.
11 After all, you don't have the whole fisheries
12 department coming to your meetings. You just have
13 one or perhaps two representatives.

14 A I, you know, I can't
15 see any problem with it. I don't know whether
16 it would be meaningful or not to the party coming,
17 he may be interested, especially if they had some comments
18 on the thing.

19 Q Now, are the meetings
20 that you had of the Land Use Advisory Committee, are
21 they public meetings?

22 A Not really, I guess they
23 haven't been really classified, as far as I know,
24 but I don't believe that they would be public meetings,
25 no.

26 Q All right. Is that just
27 something that happened or is there a specific policy
28 on that or --?

29 A I am not aware of,
30 no, of what, I haven't, I think preferably we would

1 like the people that show, that have their concerns
2 in that thing, which is in our own group, the
3 Land Use Advisory Committee which was formed for that
4 purpose, because you get into such things as
5 distribution of permits and applications and all this
6 which is very time consuming and paperwork is just
7 unreal when you start into something like that, and
8 therefore, it is confined to people that can draw
9 on expertise within their own group. I am thinking
10 more of the other government departments. They can
11 draw on expertise ^{from} /throughout their organizations
12 and we like to keep it to a minimum I think.

13 O All right, now, what
14 about the decision that this committee makes, is that
15 fed back into the communities, or the recommendations
16 that they make?

D. Longlitz
Cross-Exam by Bayly

Or does the community involvement stop with the recommendations that they make to you?

A There has been, I think the permits when they come out are given back to the communities to include -- to show them clauses that were used and that will regulate the operations as far as their concerns are. In that end of it now I don't know that the specific concerns or recommendations, shall we say, of an Advisory Committee member have been sent back, no, I don't believe that's been happening.

Q Have they ever been requested, to your knowledge?

A I don't recall. They may have, I couldn't say for sure.

Q And do you consider the -- how do you weight the concerns of the various parties? Is the community input just one of many, or is it given more or less weight than that of some departments?

A They are all based on environmental disturbance or minimizing environmental disturbance, I should say, and on that basis is what we react to, you know, specific instances or problems that are coming out of it that substantiate things. That's what you can react to specifically, and I would say that it doesn't matter which group you're working with, if the problem is specific we react to it.

Q All right then, do you get involved in the trade-offs between departments as to whether something is more damaging to the birds than it is to the caribou, to take an example?

D. Longlitz
Cross-Exam by Bayly

A I don't think I quite follow your question. Are you referring that maybe something may be more damaging to the Game Management people than say the Wildlife Service?

Q Yes, there may be one department that is concerned about the damage of siltation in a stream of a crossing and another department may be concerned if the crossing located in another area, it may be close to a denning site.

A I think that both those considerations are taken in, I don't think there's such a thing as a trade-off. You can, as I say, there is a number of conditions you can put into an operation to cover both areas involved. If not, you modify the program, for instance, to go around a specific point or something along this line.

Q But you're in the business of minimizing rather than eliminating, I gather. You get into some situations where some damage may result. You must determine at that point whether it's acceptable or not acceptable damage. Mr. Templeton asked you about logs used for winter crossings of water bodies, and you said that you think the damage was minimal. I take it from that answer that some damage does exist, but the level is small enough that you find it acceptable.

A Yes, this is what you have to -- I mean if you're going to conduct any operation or any type of thing there's no way that you can go and have no damage period. This is ridiculous to think that. But there is going to be some, yes, and that's

D. Longlitz
Cross-Exam by Bayly

1 what we work on, on that basis.

2 Q And you refer to that
3 sort of thing in your evidence at 10548 --

4 A 8?

5 Q -- starting at line 12,
6 you were showing us a slide with some hummocks that had
7 been removed, and you said,

8 "You will note here these dark spots are
9 representative of the hummocks being removed
10 and I would say probably in my opinion the
11 average disturbance here is borderline."

12 I gather from that that you are not -- you're in a
13 position of deciding whether an actual disturbance is
14 one that you should take action about or not take
15 action about.

16 A Yes, it will be based not
17 only just on the site, you look at it next year and see
18 if there's any erosion, or anything you expect coming off it
19 that's how you really can determine what you're working
20 with.

21 Q So I'm not being unfair
22 then when I suggest to you that you look at an operation
23 thinking (a) it would be ideal if there were no environ-
24 mental damage, but (b) there probably will be some, let's
25 figure out a way to minimize it as much as we can.

26 A Yes, that's right, yes.

27 Q And that's what is involved
28 in the input of the various departments when they are
29 worried about the various interests they have -- if
30 they're Fisheries or Wildlife, or Game Management,

D. Longlitz
Cross-Exam by Bayly

1 whatever they may be, they will have inputs from
2 different points of view which you benefit from in
making your decision.

A Yes.

Q And you're saying that
they're weighted along with the community action,
which may say something is environmentally damaging from
their point of view, perhaps socially damaging from
their point of view and you take that into consideration
as well.,

A Yes, I think that we
look at the environmental side of things for sure; that's
one of the real key things that you've got to be con-
cerned about.

Q Do you get into the social
side at all, Mr. Longlitz, or do you try and stay away
from that? If a community said, "We don't want those
trucks rumbling up and down the main street 24 hours
a day, we think the land use permit should be to go around
the settlement," would you consider that as something
that's within the ambit of your jurisdiction?

A That's an interesting one.
I can't recall really, you know, I don't know on that
really. I don't recall it ever being the situation that
arose. This may have been expressed in a different way
maybe but at this time I can't seem to think of any.

Q You didn't have anything
to do then with the bypass around Inuvik?

A No.

Q But that's the sort of

D. Longlitz
Cross-Exam by Bayly

situation that I mean that you may run into that where it may be the shortest distance between two points but it goes past everybody's house.

A A bypass could also create more disturbance too.

Q Environmentally.

A Yes.

Q But you, as you say, are concerned with the environmental side and speaking from your knowledge you haven't run into a situation where you've had to consider social considerations.

A No.

Q But I take it if we consider a person's livelihood from say trapping and fishing to be a consideration, you at least indirectly look at that if the community says, "Don't put a seismic line there, that's Joe's trapline."

A Yes, oh yes, well that's an interference. It's twisted a little bit in that sense that, yes, if there's a trapline there, by all means I think an example where I think where I can recall is where the bulldozer operator will have to level the banks, the snow banks that he creates on either side so that the trapper can get down the line with his skidoo, and not have to cross over a rough area of that kind. I'm aware of a situation in that sense it has been done.

Q And that is something you may put into a permit --

A Yes.

Q -- but that's more social

D. Longlitz
Cross-Exam by Bayly

than environmental.

A Yes, that's true.

THE COMMISSIONER: Well, Dr. Bayly, maybe this would be a good time to adjourn for the day.

MR. BAYLY: I'm happy, Mr. Commissioner.

THE COMMISSIONER: And we'll start at nine o'clock tomorrow morning and then on Thursday, and Friday we'll start each morning at 10 A.M. The reason for that is that the Court reporters will on Wednesday and Thursday be at the community hearing here in Yellowknife, and in fairness to them I think we should on each morning following, that is Thursday and Friday, start at 10 A.M. instead of 9 A.M.

Mr. Goudge, you might canvass counsel and see if they want to sit on Saturday morning. If they wish to, that's fine with me; if they don't want to, that's fine with me.

MR. GOUDGE: Yes sir, I'll do that.

THE COMMISSIONER: So we'll adjourn until nine o'clock tomorrow morning.

(PROCEEDINGS ADJOURNED TO OCTOBER 15, 1975)

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Mackenzie Valley pipeline inquiry:

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Vol. 71

IN THE MATTER OF APPLICATIONS BY EACH OF

- (a) CANADIAN ARCTIC GAS PIPELINE LIMITED FOR A RIGHT-OF-WAY THAT MIGHT BE GRANTED ACROSS CROWN LANDS WITHIN THE YUKON TERRITORY AND THE NORTHWEST TERRITORIES, and
 - (b) FOOTHILLS PIPE LINES LTD. FOR A RIGHT-OF-WAY THAT MIGHT BE GRANTED ACROSS CROWN LANDS WITHIN THE NORTHWEST TERRITORIES,
- FOR THE PURPOSE OF A PROPOSED MACKENZIE VALLEY PIPELINE

and

IN THE MATTER OF THE SOCIAL, ENVIRONMENTAL AND ECONOMIC IMPACT REGIONALLY OF THE CONSTRUCTION, OPERATION AND SUBSEQUENT ABANDONMENT OF THE ABOVE PROPOSED PIPELINES

(Before the Honourable Mr. Justice Berger, Commissioner)

Yellowknife, N.W.T.,

October 15, 1975.

PROCEEDINGS AT INQUIRY

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APPEARANCES:

Mr. Ian G. Scott, Q.C.
Mr. Stephen T. Goudge,
Mr. Alick Ryder and
Mr. Ian Roland for Mackenzie Valley
Pipeline Inquiry;
Mr. Pierre Genest, Q.C.
Mr. Jack Marshall,
Mr. Darryl Carter, and
for Canadian Arctic Gas
Pipeline Limited;
Mr. Reginald Gibbs, Q.C.
Mr. Alan Hollingworth for Foothills Pipelines
Ltd.;
Mr. Russell Anthony,
Prof, Alastair Lucas for Canadian Arctic
Resources Committee;
Mr. Glen W. Bell and
Mr. Gerry Sutton for Northwest Territorial
Indian Brotherhood and
Metis Association of
Northwest Territories
Mr. John Bayly for Inuit Tapirisat
Canada and the
committee for Original
Peoples Entitlement;
Mr. Ron Veale and
Mr. Allen Lueck for the council for
Yukon Indians
Mr. Carson H. Templeton for Environment Protection
Board;
Mr. David Reesor for Northwest Territorial
Association of Municipalities
Mr. Murray Sigler for Northwest Territorial
Chamber of Commerce

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I N D E X

WITNESSES FOR MACKENZIE VALLEY PIPELINE INQUIRY:

Don LONGLITZ

- Cross-Examination by Mr. Bayly (cont)
- Cross-Examination by Mr. Bell
- Cross-Examination by Mr. Marshall
- Re-Examination

Peter LEWIS

- Cross-Examination by Mr. Templeton
- Cross-Examination by Mr. Bayly
- Cross-Examination by Mr. Marshall

Ken ADAM

- Cross-Examination by Mr. Marshall

EXHIBITS:

- 277 Pointed Mountain Agreement
- 278 Land Use Regulations
- 279 Posting for Resource Management Officer
- 280 2 Letters re startup & shutdown, 1973-74

Yellowknife, N.W.T.

October 15, 1975.

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. GOUDGE: Mr. Commissioner, as we begin this morning, I have another undertaking to discharge, if I may. We called, as you recall last time, Mr. Owen to talk about the Pointed Mountain Pipeline. Mr. Bayly, in cross-examining him, referred to the agreement between the Crown and Westcoast Transmission governing the line, and asked that it be produced and filed as an exhibit at page 10458 of the transcript, and I have a copy here which I would like to leave with the secretary, if I may.

(AGREEMENT BETWEEN CROWN & WESTCOAST TRANSMISSION
MARKED EXHIBIT 277)

MR. HOLLINGWORTH: Mr. Commissioner, before we start the proceedings, yesterday afternoon at the close of proceedings I noticed Dr. Adams of the Environmental Protection Board was in attendance, and I spoke to Mr. Goudge and understood for the first time that Dr. Adams was here ready to be cross-examined on the evidence that he had given during the Environmental Protection Board's phase of the evidence. It's a complete surprise to me. Apparently all participants except Foothills were notified that Dr. Adam was going to be in attendance. I would like to clear up that point at this time and find out if Dr. Adam can return at a later time when we are prepared to cross-examine him, because we are not prepared at this time.

MR. GOUDGE: Let me say this, I spoke to Mr. Hollingworth about this yesterday. Two weeks ago or three weeks ago, you will recall that we had scheduled Dr. Adam to be here with Mr. Templeton to be cross-examined at that time. Presumably the participants were prepared to cross-examine him then. He could not attend then, at the last minute, because he was involved in another hearing. Last week I was made aware that it would suit the purposes of some of the participants if he was made available this week for cross-examination. Mr. Templeton said he would be made available. He is here. He's prepared to be cross-examined. It is true, as Mr. Hollingworth said, that when we left last time he was going to be part of the recall of the Environment Protection Board panel as a whole later on. He still intends to be part of that panel when it comes back in Phase 2-3. He will be back again, there's no difficulty about that, and I advised Mr. Hollingworth about that yesterday.

THE COMMISSIONER: Well, it sounds like a reasonable arrangement, doesn't it? In other words, if you wish to cross-examine him on the matters that other counsel will be cross-examining him about today, and you're not ready today, you may do so when he returns as a member of the Environment Protection Board. You have an identity of interest in some measure, I take it, with Arctic Gas -- no, it's not so, really; on the Williams thing you have. But Dr. Adam really is in many ways closer to your own --

MR. HOLLINGWORTH: Well --

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Cross-Exam by Bayly

THE COMMISSIONER: -- thinking
than he is to Arctic Gas's,

MR. HOLLINGWORTH: -- and
similarly we have a lot less trouble with Dr. Williams,
I think, than Arctic Gas does. I think that's also a
fair statement, but I'd like to just make it clear at
this time that I would like to cross-examine Dr. Adam
at a later time when the other participants cross-examine
today or tomorrow.

MR. GOUDGE: I should say, Mr.
Commissioner, that Dr. Adam is prepared to stay the
full week if it will be of any help to my friend. He
seems a little dubious about preparing a cross-examination
for Dr. Adam.

THE COMMISSIONER: Well, let's
carry on today, and if you're not ready whenever your
turn comes to cross-examine Dr. Adam this week, whenever
we reach him, then you may do so when he returns as
member of the Board; but I don't want to send him away
now and have no one cross-examine him.

MR. HOLLINGWORTH: I wasn't
suggesting that, sir. I was just pointing out that we
had not been notified and I want to reserve my right to
cross-examine him later.

DON LONGLITZ, resumed:

CROSS-EXAMINATION BY MR. BAYLY (CONTINUED):

Q Mr. Longlitz, to continue
where we left off yesterday, or perhaps to clean up
a couple of matters first that arise out of cross-

D. Longlitz
Cross-Exam by Bayly

examination, on the subject of other possible methods of dealing with large facilities like pipelines and gas plants, are you aware of the formation of the new Federal Territorial Regional Planning Authority for the delta?

A No, I don't believe that in that relationship, I'm not aware of that, no.

Q You're not aware that that is an organization that is being set up at the present?

A No, it has no bearing on us at this time.

Q I see. You're aware of it though, are you?

A I've heard of it, yes.

Q Yes. At the moment it doesn't have anything to do with the work you're doing?

A Not at the moment, no.

Q All right. Then have you any thoughts on whether it will take over some of the jurisdiction that you presently exercise in that area?

A At this time no, I'm not aware -- I'm not aware, I guess, of anything that might take over.

Q They haven't informed you that they want to do any of the land use regulation work in that area?

A No.

Q Now on the subject of the revisions that you are thinking about in the length of time that you keep an application before responding to

under the regulations, I understand that the contemplation is that the time may be extended from 30 to 42 days, is that what is contemplated at present?

A That has been suggested.
The regulations -- amendments to the regulations are -- carry a very wide distribution to the various, to industry and to other interested parties, and it's on the basis of their responses to this that the time frames will be set.

1 Q Is this something that your
2 office has suggested and is now going out to the various
3 people who are interested in the regulations to see what
4 their reaction is?

5 A I wouldn't say directly,
6 maybe indirectly we have discussed it to a degree,
7 possibly. I don't think it has been a direct recommend-
8 ation from us, it is probably a consensus from a
9 number of people. It, as I say, is a proposal at this
10 time. I couldn't say with any accuracy as to whether
11 it is going to be adopted or not. It has been proposed
12 though.

13 Q And when something like
14 this has been proposed I gather there is a period
15 of time before we'll know whether people find it
16 acceptable and can you give us an idea of what that
17 period of time might be?

18 A I have -- or I think that
19 you probably will see this type of amendment probably
20 won't come through until this time next year or
21 possibly a little earlier, but that is roughly the time
22 frame that I see now. The expansion of the land
23 management zones has already been gazetted, I believe in
24 late June, and that is -- the proposal there is to
25 expand the -- to include the Northwest Territories, the
26 whole Northwest Territories into land management zones,
27 although there has not been an Order-in-Council yet
28 on that.

29 Q So we won't know quite when
30 to expect any word on the expansion from 30 to 42 days?

1 A No, that is a separate
2 issue, that will be in the amendments along with a
3 number of other proposals for the amendments and
4 as I say, I would think offhand maybe sometime next
5 year.

6 Q What else are you proposing
7 to amend in the regulations?

8 A There's a number of things
9 in it, expanding, as I mentioned yesterday, expanding
10 of the definitions to include more operations, there's
11 some of the things in here that we have found are
12 unworkable in the regulations themselves, administratively
13 they would be impossible and we'll take a few of those
14 and change them around.

15 Possibly a few more definitions
16 put in for making it a little easier for the legal
17 interpretations on things.

18 Q And what would those be
19 definitions of to make it easier?

20 A Oh, more of the general
21 terms, like public roads, things like this. You get
22 into a little bit of conflict in trying to determine
23 what is a public road, for instance, what is not a
24 public road, there's your various legislations on this,
25 so you have to more or less put them together and point
26 out what you are really referring to when you say a
27 public road. This allows you access of course,
28 quite an access if it is a public road.

29 Q Do you contemplate
30 sending these amendment proposals to the hamlet councils

1 or the appropriate representatives of the communities
2 to canvass their opinions and feelings on these?

3 A I am not aware -- this
4 is a -- these amendments are being prepared by our
5 Ottawa office and they have done a very wide distribution
6 on them. Now, who all they have sent them to, I am not
7 aware at this time. I do know that such, the Territor-
8 ial Council, they were before the Territorial Council
9 earlier on this year and I couldn't say for sure
10 whether they were sent to the councils or not. There
11 is a possibility there. I am not sure of that.

12 Q Yes, and what about the
13 other one we were discussing, the one on the increased
14 number of days, do you know whether that has gone
15 into the communities?

16 A Well, that was in part of
17 that thing, it was one complete package with all of the
18 proposed amendments in it.

19 Q Oh, I see.

20 A It wasn't -- they aren't
21 handled as separate ^{little} issues, the idea is that it will
22 be a total group, you know, all of the amendments will
23 be put together and be one presentation.

24 Q Yes.

25 A As an Order-in-Council.

26 Q Now, yesterday we went
27 over the fact that the application goes to the hamlet
28 councils or community councils and that the discussion
29 in the Land Use Advisory Committee does not go to them.
30 Can you tell me whether the permit goes to them when

1 one has been issued for them to have a look at it?

2 A Yes, I believe that in
3 recently or in more recent times here that in some
4 cases where there is conditions in there regarding
5 the community comments, that there is a copy of the
6 permit is sent and it outlines to them some of
7 the conditions that have been, you know, that we have
8 put -- that are in the permit which would safeguard
9 their concerns. I don't know as this is done as a
10 general rule, it is where there is some real concern
11 expressed and this has in fact happened at times.

12 Q So this hasn't become
13 institutionalized as part of your general procedure.
14 It is only done in particular cases where there is a
15 concern that you feel they should get the follow
16 up on.

17 A Yes, it may be, some of
18 the field offices may be giving them copies, I don't
19 think there would be any objection to that, but --
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30

D. Longlitz
Cross-Exam by Bayly

Q So if a person had asked what had happened, they would probably be allowed to have a look at a copy.

A Oh yes.

Q In cases where the inspector will only issue a warning rather than some sort of stipulation about corrective measures, that's just an expression of concern?

A Yes, that is your inspection report that he leaves at the site. These are mainly a status indicator to the operator where he stands as far as we're concerned, and if there are unsatisfactory items on the report, then he is in violation of the regulations and will have to correct his actions. This is the way that we inform them, and then it gives -- the inspector, of course, will be looking at this on his next inspection to ensure that the operator has indeed complied, or you know that he's working towards that. It's from there then that you go into stronger action from that point on. So there is on each inspection a report left with the field operator.

Q Whose initiative is it to decide what has to be done to corrective measures, is that left generally to the operator in that first instance, or --

A No, I would say the inspector makes that decision in talking with the operator to also understand his problems that he's faced with, and see, you know, whether or not they're

D. Longlitz
Cross-Exam by Bayly

being a little unreasonable maybe on some things and why a thing occurred. I think of such things where there is garbage and debris laying around why was it there at the time and was this the practice or was it just a problem of malfunction of something, you know, this kind of thing. But it's mainly up to the inspector to make that decision on the site, and as I say, he must leave a copy of that report at the site when he's there.

Q And then he forwards a copy to you?

A Yes.

Q Do you employ legal counsel at any stage in proceedings, say you're leading up to a prosecution, to find out what you should gather in the way of evidence, or do they not come in until later stage?

A Well, we had a working relationship with the Department of Justice in Edmonton and Vancouver, who will give us legal counsel and we also have the Crown attorney's office here in Yellowknife, so we do have access to legal workings. I was just in Vancouver here recently discussing various aspects of the Regulations with the legal advisor there

Q And do you find that it is a requirement that you get opinions from them as to how you should proceed if you're worried about an operation, or the interpretation of a section of the regulation?

A Oh yes, this is quite straightforward actually. You must do that because there

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Cross-Exam by Bayly

are quite some different interpretations that can be taken, that's for sure.

Q That leads me into the realm of recruitment and training of your staff. Now can you tell me in the first instance from where your staff is recruited? In other words, you advertise for them, and what sort of things do you advertise for?

MR. GOUDGE: Mr. Bayly, we have, really at your request a copy of a posting, I take it, Mr. Longlitz, is that so? I don't know if that would be of assistance, if you want to show the witness that.

A Yes, our recruitment works through the Public Service Commission, and that's a job poster that would normally be out in the local Post Offices.

MR. BAYLY: Q And if you would have a look at that, Mr. Longlitz, and I think, Mr Commissioner, we can have that marked as an exhibit.

MR. GOUDGE: Yes, that should be marked, and perhaps the Territorial Land Use Regulations that was referred to at length yesterday should be marked as well.

MR. BAYLY: Q You have had a chance to look at this prior to coming here, I believe, Mr. Longlitz, have you?

A Yes, I've seen it before a number of times.

Q Without reading the entire job posting into the record, could you tell us briefly the qualifications that you look for in recruiting

D. Longlitz
Cross-Exam by Bayly

staff, and I gather this is for an inspector position?

A Yes, what we call a resource management officer position. They have to be a graduate from a recognized technical forestry school, and have experience in resource-based industry -- seismic operations, mineral exploration, logging, etc., or in a government renewable resource management program, and have a knowledge of equipment and machinery used in geophysical exploration, drilling, earth moving, land clearing, timber harvesting, and forest fire control.

Q Could you go a little slower, Mr. Longlitz? This poor young lady has to get it all down.

A Knowledge of equipment and machinery used in geophysical exploration, drilling, earth-moving, land clearing, timber harvesting, forest fire control. It is desirable that applicants be able to communicate with native residents, have some understanding of local customs, culture, and economic conditions.

Q And that is a job posting that went up in Yellowknife, is that correct?

A Yes, and also in the south as well.

Q All right. Now does that require, in order to complete the forestry course or the government based renewable resource course, does that require a certain grade level in school, or diploma from a school?

A I believe that most of them

are you, I think you must have a Grade 12 diploma before you enter a technical school. I wouldn't be certain on that but I believe so, yes.

Q Now you have another group of people, I understand, that are trained as resource management officers, and they are the result of a fairly recent native people training course that you have run in the Northwest Territories, is that correct?

A Yes, there is -- we have some trainees and they've now been taken on strength I believe.

Q Yes, and that program has been run once, as I understand, is that correct?

A Yes.

Q And what are the job qualifications or the qualifications to enter that program?

A That was fairly extensive work mainly on-the-job training. It entailed a lot of actual field work and also it was a lot of what would you say, knowledge from various groups, I think, or let me see -- people with expertise in forestry and various fields. This was interspersed throughout the training with these people coming in and giving lectures to the people, plus they were also in more or less administrative training as well, within the organization in the various sections. I have one fellow right now on my staff here in Yellowknife.

Q Now this course, what was

D. Longlitz
Cross-Exam by Bayly

1 the duration of the course?

2 (LAND USE REGULATIONS MARKED EXHIBIT 278)

3 (POSTING FOR RESOURCE MANAGEMENT OFFICER MARKED
4 EXHIBIT 279)

1 A I think it was about
2 a year, it was run for a full year.

3 Q Yes, and it finished I
4 believe close to April or May this spring --

5 A June, I think --

6 Q June?

7 A June, around there.

8 Q And I understand there
9 were eight people that began the course, would that be
10 your recollection?

11 A I believe so, yes.

12 Q Of which seven completed
13 the course?

14 A I am not sure. I thought
15 there was eight, but at the end of it there was an
16 assessment and certain people were qualified. Now
17 I don't recall offhand how many were qualified and
18 know there was one that was not for certain and he
19 working with me now for the training in this.

20 Q Yes.

21 Now, what you say these people
22 have been taken into positions, are they all in per
23 positions with you, either your office or a district
24 office, at the present time?

25 A I am not sure just what
26 positions they're in. They are working for us in the
27 field now, yes, and I don't know what, I couldn't
28 be certain as to whether they are on a -- I believe
29 the intent is for permanent positions or man years,
30 whichever is -- like man years and this to work with,

1 and I am not sure whether they are in positions or
2 they were. I know that the intent was, yes. I don't
3 know whether they have been actually placed in a position
4 yet or whether they are working towards that now. I
5 couldn't say on that, that is not in my jurisdiction
6 really.

7 Q Have they been working
8 long enough for you to assess the success of this
9 program in terms of the quality of officer that it
10 has been able to turn out?

11 A I would -- my own opinion
12 is that I would like to work a little longer with the
13 people and put them through some actual situations,
14 and I find that basically when you bring people
15 on strength and put them in, it is a little different
16 than training and therefore I would be more inclined,
17 I would like to see them work a little longer before
18 you know, that I would be ready to give them full
19 status or full operational status, shall we say, as
20 an inspector.

21 Q How does that compare
22 with, say, the job posting that you have before you,
23 when do those people come on full strength, I think
24 is your phrase?

25 A Again, I think that you
26 have to work through a full season with those people
27 as well. I don't think there is any real variance,
28 it is a matter of getting out there and seeing
29 how they can carry on the job and react and get things
30 done.

1 Q Now, when you say a
2 full season I take it you really mean the winter
3 season when most of the work is done?

4 A The winter season follows
5 a summer season so that you can have a look at what
6 you have been asking to be done in the field and you
7 have a chance to get out on the ground and see in the
8 summertime a bit of a comparison.

9 Q So these people have
10 really only worked through the summer portion of the
11 year?

12 A Yes, that's right, yes,
13 they'll be working now on to the winter portion and
14 then we'll be able to assess them a little further on
15 that basis and either give them some upgrading if
16 necessary in areas or whatever is necessary.

17 Q Is there another class
18 in progress now to train another group of people?

19 A No, there is not, not
20 at this time.

21 Q Can you tell me why that
22 is, why it isn't continuing again this year?

23 A I couldn't really say
24 that it isn't going now. There may be a possibility
25 that they want to look now and assess everything and
26 see how it is coming out and maybe look in the future
27 towards upgrading the system a little bit, if there're
28 some problems or if there is not, well, ^{they} maybe going on
29 with this same type -- I think there is a period of
30 time here where they're probably assessing things and

1 seeing how things worked out.

2 Q How long do you keep a
3 resource management officer on the average? How long
4 does he stay on the job?

5 A That's a rather hard
6 question to answer because I, again, I am not in the
7 hiring procedures and so I don't really follow the
8 whole business of manpower planning and this type of
9 thing, and then I know of fellows who have been
10 here as long as I have and I also know of fellows
11 that have gone, so --

12 Q The reason I have asked
13 that is that you have said that you would like to see
14 them work a full year before you'd be prepared to let
15 them go out on their own because there are things that
they should learn from more experienced officers.
It appears then that they would have to work a full
year before they became independently useful.

A To a degree, not necessarily so. You have to understand when a fellow
is going out and doing an inspection he is certainly
going to come back in and report to his superior
officer and of course on that basis the superior
officer may decide to go right back out and have another
look, so irregardless of whether the fellow is actually
-- we also do, we are trying to work on having these
fellows fill out reports at the site and put them
kind of right into the work and then we correct them
as we go along, so that you are getting, you are
getting a coverage and at the same time you are

1 improving the situation so you can't say, I guess, the
2 guy is operational, but he is semi-operational type
3 of thing. It makes a little more work for us, or
4 his supervisor to kind of follow him a little closer
5 is what I was getting at there.

6 Q I understand that they
7 get better as they go along.

8 A Yes.

9 Q Do they get some form of
10 legal training so that if they do run into an infraction
11 that isn't corrected by an operator and they feel that
12 a charge should be laid that they are in a position to
13 be able to do that?

14 A The procedures, normally
15 the way you work an operation is you design it so that the
16 work that the field fellow is doing ^{will} not interfere with
17 any legal proceedings you should take, and he must
18 act in that kind of a pattern. In filling out
19 reports and that he must be careful as to what he
20 puts down there and this is, it is kind of an adminis-
21 trative procedure that you work on rather than a
22 training thing, because when you get into the legal
23 requirements, then of course we turn it over to our
24 Crown attorney.

25 Q But to be able to
26 carry out the inspection required before the issue
27 of a permit under section 19 of the regulations and
28 I am thinking particularly of 19.3 which states that
29 where an inspector makes an inspection under sub-
section 1 he shall investigate and report to the

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1 engineer particulars of (a) the existing ecological
2 balance and physical characteristics of the land.

3 What sort of training does
4 he get so that he understands ecological balances and
5 physical characteristics?

6 A Well, again, this gets
7 back into this basis that I have mentioned earlier
8 about them being over a full season because you can
9 go out there on a pre-inspection and discuss such
10 things as locations of sumps and pits and various
11 things like this and then in the summer see the
12 actual effect on this. Of course this is done more
13 by our experienced people rather than the newcomer
14 to it. He would go along just to see what all the
15 concerns were at the site and on that basis then he
16 would start to understand some of the concerns. A
17 lot of it is, there is quite a bit of concern
18 involved in when you are at a site and you know that
19 if you, for instance, put a sump on a hillside or a
20 slope, it is liable to run down the hill in the
21 summer time and things like that. It is one of the
22 key problems that we have, such things as putting
23 things as putting things in a drainage course or a
24 water course, it will be flooded out in the spring,
25 certainly, so various things on this line which are,
26 some of that training of course, this goes back into
27 their schooling, their technical schooling as well.
28
29
30

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Cross-Exam by Bayly

Q So they get some of that at Technical School if they are recruited as a result of your Yellowknife type of posting, do they get some of that in the schooling that was given to the native peoples training program that you had?

A I believe that their training, as I say, was on the job, and they were able then to look at various operations and follow right through more or less inside the program.

Q I see. So this was more of an apprenticeship kind of training.

A Yes.

Q And when the regulations talk of "existing ecological balance", you seem to be looking more at positioning of facilities like camps and things rather than how the various animals interact in an area; is that how you interpret it?

A Well, as well there -- our field people are associated with all the departments who are located in the field, such as Game Management, and in that area there is some liaison with those groups to, you know, to keep abreast of the later developments and problems in that area. There's also attendance of certain meetings and that to carry on, so you get -- you kind of keep abreast of some of the things that are in the field as well.

Q And your trainees get this too, do they, on the job?

A Yes, they will also have to work into the same pattern.

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Q Yes, and that applies, does it, as well to the kinds of considerations that an inspector must make in a decision under 9.3 of the regulations, dealing with serious erosion where he is to recommend to the operator erosion control techniques. Does he get training in soil sciences and dyking techniques and this sort of thing?

A Well, a lot of that again is at forestry school or at the technical school there is erosion control measures and that. There are, of course, in-house discussions, workshops, land use workshops and this type of thing that we do carry on periodically, and there's constant liaison with, you know, internal liaison through the various districts and you can find out various methods that seem to be working better than others. As well there are some of the practices from the south which can be applied up here in various areas. I'm thinking of ditch blocks and various things along this line.

Q And are these things to which your trainees from the native peoples program that you instituted have access as well?

A Yes. We also have on-strength and environmental scientist, on staff as well who, where when a situation develops, can be dispatched to the site to give a further interpretation on the site and possible other measures to work into that area.

MR. BAYLY: Those are all the questions I have, thank you.

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Cross-Exam by Bell

CROSS-EXAMINATION BY MR. BELL:

Q Mr. Longlitz, turning to Section 3 of the regulations, I see that:

"Lands, the surface rights to which have been disposed of by the Minister are exempted from the regulations,"

and I was wondering, can you tell me, are land use activities on such lands regulated in any way?

A Well, I think what you may be looking at there is some kind of a land tenure agreement, and in land tenure agreements, of course, there are covenants which are also to be complied with, so I would say yes, they are regulated.

Q Could you give me an example of such an agreement? Would Pointed Mountain fall into this category?

A I haven't looked closely at the document, but I believe there are, that has been tabled here, I believe that there are covenants in that. I wouldn't say for sure, though, but I think there are, yes.

Q Who makes these agreements?

A Well, that is a separate division within the government, separate from ours. We call them "land management section" .

Q Is the advice of your agency sought prior to the making of these agreements?

A They have access, yes, to our permits, any permits that we've issued in that general area, and they can work on that basis. They also

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have, I believe, a consultation basis with various people. Again that's quite a bit out of my jurisdiction so I --

Q Are you asked at all to make recommendations concerning the kinds of conditions which might go into these agreements?

A At times, yes.

Q And are these recommendations generally incorporated in the agreement?

A I believe so, yes.

Q Can you think of any case where they haven't?

A I guess I shouldn't even try to answer that because I'm not aware in this area.

Q Who is responsible for the enforcement of the conditions that would be contained in such agreements?

A I believe also that there are, if you're working with land tenure through our land agents throughout the Northwest Territories, which are also in the same group that I work with, like our people in the field our land use inspector would possibly go out and make a report on a land tenure agreement and report this back through another --

Q Some of your people wear two hats.

A Yes, right.

Q Now these tenure agreements do you know, can you tell me if they involve cases where title to the land is granted in what we call "in fee

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simple?"

A I couldn't really give you a real definite answer to that because that is something that's completely separate from our work here in land use, or my experience anyway in land uses. We work on a transitory type of thing. I think you're talking about something that's a little more permanent and I am not aware of just what all title is transferred or whatever.

Q Well, do I understand then that you have, you feel that you have no jurisdiction in your office over lands which are owned outright by the user?

A That's right, yes. These are, as I say, if the surface rights have been disposed of and he has an agreement separate from this we do not have any authority on that site.

Q Well, we've been told by both the applicants that the land that they want for the right-of-way, they want to own that land, which I assume would mean a transfer of the surface rights. Can you see any problem in enforcing land use activities or at least in regulating land use activities in that kind of a situation?

A I think that the -- you'd have to know the development scheme and this in with that before you could make a decision on whether you control it or not, because I think there's two different phases here. You're talking about development and you're talking about a right-of-way, which I feel are two

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different phases actually; but that may not be, I don't know, I couldn't say for sure. I think there's other factors involved in here. There's a development phase, which is going to be different, and there's also going to be -- going to have to expect some kind of control over it at the end; there's two different controls really.

MR. MARSHALL: Mr. Commissioner, perhaps I didn't catch all of Mr. Bell's question with respect to the plans of either of the applicants with respect to owning of the land. I'm not sure that that's in evidence. As I understand it, there's an application for a right-of-way with respect to permanent facilities, it may be that the applicants would like a fee simple ownership but I think it's something such as a traditional pipeline easement is what's being sought with respect to right-of-way itself.

1 MR. BELL: Well, thank you,
2 those are all the questions I have.

3 THE COMMISSIONER: Who is the
4 next questioner?

5 MR. GOUDGE: That would be
6 Mr. Hollingworth.

7 MR. HOLLINGWORTH: I have no
8 questions of this witness, Mr. Commissioner.

9 MR. MARSHALL: I have a few,
10 sir.

11 CROSS-EXAMINATION BY MR. MARSHALL:

12 Q Mr. Longlitz, page 10540
13 which was in volume 70 of your transcript, I don't
14 think you necessarily need the reference, it is a
15 fairly simple point.

16 A Yes.

17 Q You discuss the necessity
18 of adequate preplanning of access road location to
19 avoid several problems that may develop and you
20 illustrated this with some of your slides. I was won
21 sir, if you agree with me that is orthophoto mosaics
22 complete with contour lines were used in the select
23 of the route and the line was surveyed on the ground
24 before the clearing crews arrived at the site,
25 that much of your concern in this regard would be
26 relieved.

27 A Yes, to a degree. I
28 think that that really helps a lot. The other thing
29 though is how do you, is once you have figured that
30 out on the mosaic, it is a matter of getting that

1 communication back down to the people on the ground and
2 that in marking that route, and marking the route. I
3 think this is the thing that gets a little bit of
4 concern and that's, those slides that I showed are
5 evidence that it is on the ground. They may have
6 flown the particular area and they may have scouted
7 it and everything, but there is a point there that it's
8 getting the communication back down to the field level
9 and getting things moving along on the path that you
10 have picked out, but that is definitely an asset.

11 Q It is a step in the
12 right direction.

13 A Yes.

14 Q Sir, in your transcript
15 beginning at page 10550, you discuss the advantages
16 of hand clearing, and as I understood it, you said
17 that you sometimes have a problem when the handclearing
18 is done during the winter because high stumps are left
19 due to deep snow cover at the time that the clearing
20 was done. I take it that if the handclearing was
21 performed in the summer and fall months when there was
22 little or no snow cover and the fallen trees placed on
23 one side of the right-of-way for disposal the following
24 winter, and the personnel were moved in by helicopter,
25 that this problem that you described could be overcome.

26 A Yes, you have also
27 trouble though with access and moving your crews
28 along the line and this kind of thing which is, unless
29 you use helicopters, something like this, you are
30 working an early fall type of thing, you may have

1 problems with access and personnel and transferring
2 personnel back and forth and it gives you quite a
3 bit of a problem in that sense.

4 Q The access problems
5 could be overcome by the use of helicopters though?

6 A Oh, yes, yes, you could
7 work that way.

8 Q And provided the clearing
9 was done in the summer or the early fall, then you
10 could avoid this problem that you have encountered
11 of the trees being cut off too high because of the
12 problem of the snow cover during the winter.

13 A Yes. I also think of
14 a situation whereby if you removed all the snow
15 cover -- or not the snow cover, but the tree cover and
16 you were in high ice content soil with a fairly heavy
17 tree cover, the removal of that could cause you
18 some subsidence along your area which is another
19 thing you would have to work into your situation
20 there and possibly you would want to clear just
21 the amount required, you know --

22 Q Well, provided the
23 clearing were done in the summer or fall immediately
24 before construction, that would to a large extent
25 alleviate that concern.

26 A Yes, I think if you
27 kept it in that time frame.

28 Q Sir, at page 10557 of your
29 evidence you discuss the difficulties of determining
30 when there is sufficient frost penetration to support

1 the movement of vehicles and you mention that it
2 varies considerably with terrain and moisture content
3 and snow cover. I was wondering if you could give
4 me a rough range in terms of the inches of frost
5 penetration. I am thinking of a situation of nothing
6 having been done to artificially induce frost penetration,
7 but could you give me some sort of a rough range in
8 inches of frost penetration that would be adequate
9 to support the movement of vehicles, say, around
10 Inuvik?

11 A Well, we have in the
12 past have been looking at somewhat around eight
13 inches of frost penetration. This, again, will be
14 probably in the hollows is where we are concerned
15 where you have a lot of snow cover because your
16 frost penetration will be the lightest there and you
17 could have on the knolls, you could be up to twelve,
18 fourteen inches of frost penetration, but in the
19 hollows or in areas where you have frost penetration
20 not going down.

21 Q And that would apply,
22 would it, in say the Inuvik area?

23 A Yes, we have used that
24 up there, yes.

25 Q What about further south,
26 say, around Norman Wells?

27 A As a general rule we
28 like to use that. You have a little more problem
29 as you get into the tree belt because of the fact that
30 there is a lot heavier snow fall in there and the frost

1 penetration is a much slower rate but we have worked
2 on that base too. We find that you tend to break
3 through with various pieces of equipment if you
4 don't have eight inches of frost.

5 Q That would be then
6 really eight inches as a minimum?

7 A Yes.

8 Q Everywhere.

9 A I would believe so. There
10 are lighter vehicles. I am thinking of the cat or
11 something, a crawler tractor or something along this
12 line that, you know, would create a ground bearing
13 pressure of somewhere beyond, I'd say five to --
14 beyond five p.s.i. for sure, probably up around nine,
15 eight or nine p.s.i.

16 Q I was wondering, sir,
17 if you every tried to predict this using degree days
18 rather than say inches of frost penetration.

19 A That's a little hard.
20 We looked at that, but there are so many variables
21 in frost penetration that it makes it -- I don't think
22 that you could use it as a hard and fast rule. It
23 depends whether you have wind or not that is going to
24 blow the snow into the hollows, various things along
25 this line and so it doesn't matter how cold it gets,
26 once you've got that insulating layer of snow on the
27 ground, it takes a lot longer to pass through it.

28 Q You haven't found a
29 degree day formula to be too workable?

30 A Not to any degree, you

1 know, we would much sooner rely on the actual setting
2 out there and having a look at things.

3 Q I was wondering, sir, if
4 you could give an indication of when, typically,
5 based on your experience there has been sufficient
6 frost penetration, say, again in the Inuvik area?

7 A I don't recall the
8 dates offhand, I probably could locate them though,
9 if you require them.

10 Q I think we would be
11 interested in that data, sir.

12 Would you have it as well,
13 say, for the Norman Wells area and the Fort Simpson
14 area?

15 A Yes, I think we could
16 probably come up with some -- fairly -- it wouldn't
17 be exact dates, but they would be fairly relevant,
18 yes.

19 Q Perhaps you could furnish
20 that through Mr. Goudge.

21 MR. GOUDGE: We have some
22 material here, Mr. Marshall. Perhaps at the
23 coffee break I could review it with the witness to
24 see whether it's the relevant material. I am not
25 quite sure whether it is or not. If it is, you can
26 have it this morning.

27 MR. MARSHALL: Fine, thank
28 you.

29 Q Now, sir, there has been
30 evidence given before the Inquiry of steps that can

1 taken to induce and encourage frost penetration and
2 I take it you would be familiar with the techniques
3 that are employed to do this?

4 A Yes, to a degree.

5 Q There has been quite
6 a bit of evidence that Mr. Williams gave pertaining
7 to the snow road construction and testing done
8 by Arctic Gas near Inuvik during the winter of
9 '73 - '74. I was wondering whether you or your staff
10 have been familiar with that work.

11 A The staff in Inuvik
12 will possibly be familiar with that. I, myself, have
13 had the opportunity, no.

14 Q Well, the reason I was
15 mentioning it, sir, and was wondering whether you
16 were familiar with it was because there was consider
17 description of the techniques of inducing frost
18 penetration that were employed, in evidence by Mr.
19 Williams was the fact that there was compaction of
20 the snow and organic vegetation cover by means of
21 repeated passes with with a J-5 Bombadier,
22 followed immediately behind the clearing activity
23 and they found that the active layer was frozen
24 completely with this method by October the 30th, at
25 their subsequent examination of the right-of-way in the
26 two succeeding summers indicated that the surface
27 vegetative cover was not seriously impaired. Were you
28 aware generally of the results of these tests that were
29 carried out, sir?

30 A I would have to say myself

1 personally myself, no, however, the type of things that
2 you are saying, we have experienced in that area as
3 well. This is being used by a number of companies
4 to increase the frost penetration by packing down
5 the snow and making it, the frost can go down a lot
6 faster that way.

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Q To your knowledge and based on your experience, has this been found to be effective?

A Oh yes, yes.

Q And it would follow then, would it, sir, that if a person were willing to accept the costs involved in attempting to induce the penetration of frost, then indeed the frost penetration can be accelerated?

A Yes.

Q Have your studies also, or your experience also led you to conclude that if the work is done carefully with equipment such as, say, rollogons or terra-tired or soft-track vehicles, that it can be achieved without undue damage to the vegetation mat?

A Yes, again I think when you're doing this, if you're working on a snow cover it works fairly well, yes.

Q How much snow cover do you think is necessary to have before you can start this type of work?

A Well, again it depends if you've had a wind after the snow you haven't any snow on the hillsides, and where it's bare, bare tundra, say, for instance it makes it a little difficult. There will be much more increased scarring of the surface. It would be a little hard, I think, to actually give you in inches the amount of snowfall.

Q Would that be so even in

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the late fall when the temperatures are getting down fairly low?

A A situation like that?

Q Yes.

A Oh yes, you run into a situation there, also from the operator's point of view, that it's very costly repair bills because they need that little cushion of snow to protect their vehicles. Breakdowns are something drastic in situations --

Q We're talking here about soft-track or rubber-tired vehicles.

A Yes, those would probably be able to work onto something -- again, the low ground bearing pressure units, the track vehicles and that, I showed you slides where they can be used in the summertime and cause minimal disturbance.

Q It would follow then, if it were say in the late fall, the disturbance would be even less because --

A It would be frozen all over. I would think that in that case, yes, although you find you're breaking off the vegetation because brittle and if you've got a snow compaction on top that helps.

Q Well, sir, I was wondering whether or not you had a view or opinion as to when, in an average year, work of the kind we've been discussing, that is to encourage frost penetration, could begin, say in the INuvik area?

A Again I would have to

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probably do a little bit of researching and consult our files to see what dates the fellows have been working on there. As I say, not using a frost degree day or something like this, it's a basis of going out and doing an inspection and checking hollows and this kind of thing and maybe going along with the vehicle to see how it reacts. This kind of approach, it's documented in our files and I'd have to dig through and see what dates I could come up with for you.

Q Well, do I understand correctly, sir, that what you have is simply in your files an indication of when this type of work may have been undertaken, and what effects, if any, were observed by your inspectors?

A Yes, to a degree, yes.

Q Sir, this year in the Inuvik area, say at the present time, could this work be under way? Has there been sufficient cold, ponds frozen over and some snow cover? This sort of work could be under way now?

A I'm not -- I haven't been talking to our field people here just recently to see what things are looking like up there at all. I believe that's more or less their decision. They haven't mentioned anything at this time. I'm not aware of it. It could be, I wouldn't say it is, though.

Q I'm sorry?

A It could be, I'm not aware of it at this time.

Q Well, sir, the information

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that my advisors have is that the ponds are all frozen over except for very large bodies of water, and there is three or four inches of snow on the ground. I was wondering whether in such circumstances you would think it would be appropriate for such activities to get under way?

A Again I'd have to, myself I'd want to go out and have a look to see what kind of frost penetration you have got. If you have got, say, four inches or something like this, you might want to consider trying to see just, you know, what the high ground is like, and then work down in towards the lower areas to see what you're working on.

Q You think there might be some areas where work could get under way, depending on the conditions on a site-specific basis?

A Yes, I would say site-specific.

Q Well, sir, if one assumes that there has been sufficient frost penetration achieved, but that there is insufficient natural snow to provide adequate protection for the vegetation mat, would you agree that provided one was prepared to absorb the costs and had the necessary equipment available and in place, one could augment the natural snow cover, either by harvesting it, hauling it from frozen lake surfaces, or by manufacturing it with snowmaking equipment?

A I am not aware of the artificial snow units and how the -- how that has worked out. I understand that there was some tests done in

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Inuvik, but I'm not aware of just what the results were of it. But once you get the frost penetration in the snow you can, you know, travel can take place.

Q What about harvesting, sir, are you familiar with cases in which snow harvesting has been done, from frozen lake surfaces? I believe you discussed the harvesting concept during your direct evidence.

A Yes, a little different context there --

Q Yes.

A -- which was the building of crossings and that kind of thing. I suppose, yes, that it could be carried out. It would be a costly thing but I guess it could be done, yes.

Q Well, it would be cost dependent, I suppose, on whether someone was prepared to bear the costs that would be involved in that sort of situation.

A That's right, yes.

Q Well, then, if steps had been taken to induce the frost penetration and perhaps snow has been harvested and hauled, or it's been manufactured so that there is sufficient snow cover, and you have the frost penetration then and 6 to 8 inches of compacted snow on the right-of-way, do you think then that pipeline construction could get under way?

A I would think that -- in my own opinion, I think probably that you could work on it towards that, yes, I have a little trouble just

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envisioning what all would take place, so I am a little reluctant to answer that, but once you've got your snow compaction and your frost penetration, then your vehicle traffic and that wouldn't really affect the ground surface to any great degree. You would be travelling on snow pack and I don't think there would be many problems and you could go ahead. There is a certain amount of disturbed area anyway that you are going to have to consider. This is natural, of course. I think probably an estimate, you probably could go ahead, yes.

Q I gather you haven't seen the Inuvik snow road test report and you may be interested in that. We can have a copy made available to you so you can review it.

A I'd like to.

Q Now, sir, just coming to the other end of the winter construction season for a minute, you discussed in your evidence and again in cross-examination the criteria for stopping work. I was wondering, sir, if one were to take steps to thicken the snow cover on the right-of-way by artificial means, hauling in snow or making it, and if when the thaw period started, one limited one's activities on the right-of-way to the colder part of the day, say midnight to ten in the morning, and repaired the thin spots with artificial snow, would you agree that it would be possible to extend the working season beyond the tentative shutdown dates that you spoke about in your evidence?

A There is two things here. One is if you can cover, keep a snow cover on and keep

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the frost in the ground, you will be O.K., you should be able to travel. But the other thing is if you try and travel at the colder times of the day you get into a situation whereby you could have a thaw pattern that goes down, say, six or eight inches, and in the colder part you get another freezing period which only gives you an inch or two at the top of frost, solid frost, on which to run on, and you get into that situation of compacting that layer in between which can be damaging to the vegetation. So that is a very -- in my opinion, it's kind of a tough situation to be working in. It could give you some problems.

1 Q It wasn't totally
2 clear to me about the application of the shutdown
3 criteria, and the area of particular interest, is
4 say, between Fort Simpson and the 60th parallel.

5 Now, my information is that
6 that is in the southern part of the discontinuous
7 permafrost zone and that there are long stretches with
8 no permafrost and the existing permafrost is generally
9 not considered sensitive. I was wondering whether
10 the same shutdown regulations that you described in
11 your evidence in the Fort Simpson area would apply
12 to this type of terrain as well, or do you have
13 different criteria?

14 A Well, you could, as you
15 say, if in non-permafrost areas you have a situation
16 whereby you could operate and remove, you know, keep --
17 you could get into a rutting situation at best,
18 however, your erosion problems increase then and you
19 have quite a -- you can get into quite extensive
20 erosion control measures and things like this, because
21 as soon as you start operating beyond into spring,
22 you get into a situation where you're creating erosion
23 problems.

24 Q Do I take it from your
25 answer then that the same criteria relating to shut
26 down apply south of Fort Simpson, say to the border?

27 A Yes, we have been working
28 on that basis.

29 MR. MARSHALL: Thank you,
30 those are all my questions.

1 MR. GOUDGE: Sir, I wonder
2 if the coffee is ready whether we might break for
3 coffee and I could use the opportunity to review with
4 the witness the information that Mr. Marshall requested.

5 THE COMMISSIONER: Before
6 we break for coffee, I take it that later this week
7 Arctic Gas is going to call witnesses in rebuttal
8 to the evidence by Professor Williams two weeks
9 ago. I don't have the professor's written or
10 transcribed testimony before me, but you might, Mr.
11 Marshall, ask Dr. Clark, who I have seen around today,
12 so I suppose he is going to be a rebuttal witness, to
13 comment on these two things, no doubt he intends to
14 anyway, but I was wondering about them.

15 You remember Dr. Clark in giving
16 his evidence in May, said that to build a buried
17 pipeline in permafrost without chilling the soil would
18 lead to what he called, it was his word, "horrendous"
19 geotechnical problems. Dr. Williams disputes the
20 whole case of Arctic Gas so far as frost heave is
21 concerned because he alleges that the pulling force
22 would be, in certain circumstances, four to five times
23 what Arctic Gas has estimated. He concluded, as I
24 recollect his testimony, that it would be better, and
25 may be misquoting him, but I would like Dr. Clark's
26 thoughts on this anyway, that it would be better to
27 deal with the devil you know than the devil you don't
28 know. The devil you know is permafrost and its tendency
29 to thaw if gas in a buried pipeline travels through it,
30 he said the extent of thaw could be predicted and so on

1 and so forth and he appeared to be saying that if you
2 were going to build a buried pipeline, gas pipeline,
3 you would be better off to, not to chill the gas and
4 to contend with the phenomenon of thaw and subsidence
5 and so forth, rather than to deal with the devil that
6 you don't know, frost heave, where there is the
7 dispute, at least at the moment there is a dispute.
8 In rebuttal he may put an end to the dispute regarding
9 the extent of the heave that may be expected during
10 the life of a 20 or 30 year pipeline.

11 So you might ask Dr. Clark
12 to discuss that. Dr. Williams seemed to be putting
13 Dr. Clark back to square one. If Dr. Clark went back
14 to square one, he is faced, as I understood his
15 evidence earlier in the year, with what he described
16 as "horrendous" geotechnical problems. Now,
17 Dr. Williams was speaking about ceasing to the
18 gas at the point where you leave the continuous
19 permafrost zone. I don't think that was made altogether
20 clear in his evidence.

21 I don't suppose we will
22 reach this until tomorrow, so even if I am saying
23 all this in Dr. Clark's absence he can probably
24 at it in the transcript.

25 The other thing that I was
26 wondering about was, we are all here in the business of
27 trying to predict what is going to happen. This
28 differs from an ordinary inquiry or a court case in
29 that usually there what you are trying to do is to
30 reconstruct what has occurred in the past and while that

1 may be difficult it is an awful lot more difficult to
2 try to predict what is going to happen in the future.
3 I have no doubt that Arctic Gas, and Foothills, for
4 that matter, are rather more interested in correctly
5 assessing what is liable to occur if the pipeline
6 is built than simply seeking to justify an opinion
7 expressed earlier in the year. At any rate,
8 if Arctic Gas, let us put it this way to make the
9 case a simpler one to follow, if Arctic Gas were, as
10 a result of Dr. Williams' evidence, to be in some
11 doubt as to the extent of the pulling forces, in other
12 words, if there appeared to be a real question in the
13 minds of its advisors whether the pulling forces were
14 not in fact four or five times as great as they
15 originally thought, would that mean that they would
16 -- no doubt it would mean that they would have to
17 redesign the whole pipeline if they were first of all
18 going to retain the buried mode, would they be in a
19 position to strengthen the pipe so that pulling forces
20 four or five times as great as those they originally
21 estimated could be withstood, at the ^{points} of greatest
22 stress. In other words, could you redesign this whole
23 pipeline to accommodate those pulling forces that
24 Dr. Williams predicts, there will be over a 20
25 or 30 year period, and if you can't, does that mean
26 that your only alternative is to elevate the pipeline?

27 Well, you might ask Dr.
28 Clark to discuss those things. I naturally have formed
29 no conclusions whatever, but they are questions that
30 are going through my mind and I would like to hear

1 what he has to say about it.

2 MR. MARSHALL: I will have
3 him deal with it, sir.

4 THE COMMISSIONER: Well, we will
5 adjourn for coffee then.

6
7 (PROCEEDINGS ADJOURNED)
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D. Longlitz
Re-Examination

THE COMMISSIONER: Can we develop any interest in starting again?

MR. GOUDGE: Mr. Commissioner, I conferred with Mr. Marshall about these statistics that we have relating to startup and shutdown dates, and over the lunch period he's going to examine them closely and we'll deal with them after the lunch break, if we may, sir.

THE COMMISSIONER: Incidentally, the lunch break today will be from 11:30 until 2, and then we'll resume at 2.

MR. GOUDGE; I think that completes the cross-examination. I have two or three matters that are very brief in reply, Mr. Longlitz, in re-examining you.

RE-EXAMINATION BY MR. GOUDGE:

Q Mr. Longlitz, you said in answer to my friend that there is at present a revision of the land use regulations being carried out, is that so?

A Yes, they are looking at some amendments to them, yes.

Q Is that being done in your office, or elsewhere?

A Not entirely in my office. There are, of course, our Whitehorse Branch, ourselves, and as I mentioned earlier, the Ottawa Branch, and then these are being circulated throughout industry.

Q Yes. Then you made reference

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in your examination, in answer to Mr. Bell, to the fact that leased lands at least are not covered under the land use regulations. Did I understand you correctly?

A Yes, that is true.

Q And sold lands would not be covered under land use regulations either.

A Yes, I don't think they'd be covered either, that's right.

Q Yes. Is there a third category of land in the valley that is not covered by the land use regulations, namely Commissioners' lands?

A Yes.

Q And what does that consist of?

A Well, these are -- I earlier referred to them as block land transfers. It's a block of land that has been transferred to the Commissioner, and/or the Territorial Government, and usually is in areas of settlements or communities.

Q A community, the boundaries of a community would demark a block land transfer?

A No, not necessarily. It's quite a large area around the community, not necessarily just the boundary of the community itself.

Q And in those cases, that land is under the administration of the Territorial Government?

A In some cases, not all. There have been only certain areas set aside. At this time, some of them I'm not sure as to what the

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process, whether they're working on it for more of the communities but some of the communities are under this, yes.

Q Yes, and where there has been a block land transfer, it is under the administration of the Territorial Government.

A Yes. There's one other too, there's the reservations on land as well, which also our regulations don't apply to. These are reservations more to other departments and things like this, a reservation of the land.

Q Now finally, Mr. Longlitz, in connection with the shutdown dates that you gave in answer to Mr. Bayly yesterday, did I understand you that your procedure is to notify operators perhaps a month in advance of tentative shutdown dates?

A Yes, roughly within the month or month and a half, sometime it gives them sufficient time to start considering that spring breakup is not too far away and they can start working towards it.

Q And in advising them of tentative shutdown date, do I take it that you say, "30 days from now you will be subject to a 48-hour notice to vacate"?

A Yes, rather than 30 days we give them a date. As I mentioned, April 25th might be a date that we would use and around that date then we are considering full shutdown of all operations, and so you should plan accordingly to either have your operations completed at that time or it will be on a

16

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Re-Examination

day to day basis beyond that point, and you could find yourself shut down in the field.

Q So you say to them a month or more in advance, "Be ready at this specified date to get out in 48 hours."

A That's right, yes.

Q Does it ever happen that the 48 hours' notice is given before the date that you previously specified as the tentative shutdown date?

A Normally not. It could, but we tend to be a little conservative on that date.

Q It would more frequently happen, I take it, that the actual 48 hours' notice would be given on or after the tentative shutdown date.

A Yes, that's true.

Q Why is the 48-hour period picked by you?

A Well, I think it's a reasonable time frame for the operators to kind of gather everything together and get these last minute things in. In consideration of our dates or the 48 hours notice, we take into account, of course, that there will be operations carrying on until that last minute type of thing, so that it gives them just that little extra time. I don't think you can go beyond that, because if you go beyond that time^{frame} your conditions change too quickly. Within 48 hours you find that there isn't that much of a change.

Q I take it the 48-hour notice is given on the basis of a field inspection, is

D. Longlitz
Re-Examination

that so?

A Yes, it's handled directly by the field office. Those notices will be issued from our office in the field.

Q Now you referred to it a minute ago, but let me ask you: Would it be possible to give a 7-day notice, for example, rather than a 48-hour notice?

A I would be, I think, I would be a little reluctant at something like that, again because you can have a -- you're getting the daylight period coming in, with a longer day, and each day is a little longer and you don't know just whether you're going to have cloud cover or whatever, and this kind of thing all affects it. You could go one way or the other, so I think seven days would be a little too long actually.

Q Seven days is a difficult time frame over which to extrapolate the conditions?

A I would think so, yes.

Q Now the last question, Mr. Longlitz, that I wasn't clear on is whether your practice is to provide the actual 48-hour notice of shutdown on a project by project basis or on an area basis.

A We, to a degree, we can work on a project by project, but basically what that boils down to is an ^{area} by area, because certain areas you have snow cover remaining longer, and in other areas you don't have, and so that you can more or less look at it

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in that aspect, and all operations within a specific area would probably have to shut down, although if there is preparations made on a particular access route , for instance, where you have extra snow being placed on it and this kind of thing, to keep the frost in there, then of course you could continue the operation. It depends on what other inducements you're going to be working towards.

MR. GOUDGE: Thank you. Those are all the re-examination questions for Mr. Longlitz.

THE COMMISSIONER: Thank you very much, Mr. Longlitz, for spending as much time with us as you have.

A Thank you.

(WITNESS ASIDE)

THE COMMISSIONER: Before you call the next witness for cross-examination, I was asking Mr. Marshall to see what Dr. Clark commented on the evidence of Dr. Williams, and during the coffee break I got hold of Dr. Williams' prepared testimony and you might, Mr. Marshall, draw Dr. Clark's attention to two matters, first of all at page 7 of his -- of the questions and answers attached to his prepared testimony, he said:

1 " With regard to the question
2 of the chilled pipe under the river, this is a
3 special problem no doubt. It seems to me that the
4 potential for heave over a short time period is
5 very great here. There is no question of applying
6 shut off pressures as I understand it and so perhaps
7 the most dramatic heaves will occur when the rate
8 of freezing is fairly great and when indeed the
9 head of water represented by the river will significantly
10 aid the heaving process. The situation is quite
11 different than where we could conceive of shut off
12 pressures being applied," that is, the situation where
13 the chilled gas runs in a pipe underneath the river,
14 where there is, as Dr. Williams says, no opportunity
15 to build a berm or to replace the frost susceptible
16 soil with other soils and so forth. He says that the
17 situation is quite different, and he says that one
18 may have the same problems ultimately as well, but
19 we have to consider the earlier stages of freezing
20 without shutoff pressures, and I must say, the river
21 crossing situation does appear to be a very difficult
22 one indeed."

23 He really seems to be saying
24 that he sees no way, assuming he is right about the
25 extent of the pulling forces and the extent of potential
26 frost heave, he seems to be saying that there is no
27 way that he can see that you could build the gas
28 pipeline under the river bed. The implication appears
29 to be that you would have to build an elevated
30 crossing at the river crossing.

1 Then he says, just going on
2 there -- you might ask Dr. Clark to comment on that
3 passage, that is what I was getting at here. The
4 next question is:

5 "Q Do you consider that heave of
6 a chilled pipeline in formerly
7 unfrozen ground can be kept
8 to a manageable level? What
9 conditions would be required to
10 achieve this? "

11 This is really the question that I was saying should
12 be put to Dr. Clark, that is, assuming that Dr. Williams'
13 evidence is right and that the Arctic Gas engineering
14 advisors are wrong. Let me put it the way that I
15 did before. Suppose Arctic Gas's advisors were to
16 conclude that they were in fact in doubt about the
17 evidence they gave in May on the extent of frost
18 heave and felt that there was a real question about
19 it, what measures could be taken, or could any
20 be taken to build a secure pipeline if those pulling
21 forces are in fact four or five times as great as
22 they had first thought.

23 Then Dr. Williams goes on,
24 he says at the top of page eight of this attachment
25 to his written, his prepared evidence:

26 "There is no absolutely fundamental reason from
27 a scientific point of view why it is impossible
28 to stop the pipe being heaved."

29 So I think we have to consider what is regarded as a
30 manageable level. The implication seems to be that if

he is right and the pulling forces are four or five times as great where you have differential heave, then where you have differential heave you could build a berm five times as high as you had planned and presumably you would be able to stop the heave, that would constitute, that would be sufficient to invoke the shutoff pressure, but the question arises, is that kind of thing practical.

Then he says:

"It seems to me essentially a geotechnical, economic, and perhaps environmental protection kind of problem. I do believe as I have stressed that on occasion much higher, sometimes impossibly high shutoff pressures would be needed to prevent the heave and therefore the design procedures or remedial measures will have to be more dramatic, perhaps substantially bigger berms, or perhaps much greater excavations and replacements than Northern Engineering Services has implied on the basis of their maximum shutoff pressures. If one accepts that the maximum required shutoff pressures are say, two or even perhaps four or five times as great on occasion, than the 3,000 p.s.f. that N.E.S. proposed, then I think that one has then to proceed to some estimate of how often these situations will occur and what design procedures can be used for dealing with such situations and then

1 whether they are acceptable economically
2 and in other respects, that is, whether
3 the problem is manageable."

4 Well, he has really put the question that I was
5 raising and I noticed that and I thought I would
6 draw it to your attention.

7 In other words, if you
8 were to accept Dr. Williams' theory -- maybe I am not
9 being fair to him by calling it a theory, but his
10 view. If you were to accept his view, would the
11 problem be manageable, or would the pulling forces
12 be impossibly high, to use his phrase and would
13 that mean that you couldn't build a buried gas pipeline?
14 And if you couldn't, would that only be through the
15 zone of discontinuous permafrost? As I said earlier,
16 he urged that you accept the risk of permafrost thaw
17 and subsidence because you know what that is all
18 about, but you don't know what frost heave is about,
19 so you shouldn't chill the gas pipeline, but is his
20 statement -- I wish I had thought of asking him, and
21 I guess he is back at the Scott Polar Institute now
22 until we drag him back here again, if it comes to
23 that -- but would he have said, "Well, through the
24 zone of continuous permafrost you won't have frost
25 heave because you are not freezing unfrozen soils."

P. Lewis
Cross-Exam by Templeton

Well, ask Dr. Clark to
comment on that, and the final thing you might
ask him to comment on is this: Dr. Williams said that
the views he was expressing were widely held. He said
that he spoke -- he said that he was giving us the
conventional wisdom of students of frost heave around
the world. He mentioned Norway, the United States,
Britain, and I think Canada, and he seemed to think that
Arctic Gas's views, as expressed through the panel of
which Dr. Clark was a member, he seemed to think that
their views were not altogether in keeping with the
mainstream. That was the impression he gave me. That's
what I thought he was saying. I'm not saying I accept
anything that he said, but that seemed to be what he
was driving at.

Well, having said all that,
I see Dr. Clark has just come in. He wandered away
till I was finished.

Well, carry on then with the
next witness.

MR. GOUDGE: The next witness
is Dr. Peter Lewis, who gave his evidence in chief the
last day, and is available now to be cross-examined.

THE COMMISSIONER: Fine.

MR. GOUDGE: And using yesterday's order, if we may, sir, Mr. Templeton, I think,
would begin.

PETER LEWIS, resumed:

CROSS-EXAMINATION BY MR. TEMPLETON:

P. Lewis
Cross-Exam by Templeton

Q Dr. Lewis, do you have
the transcript ^{when you} gave your direct evidence with you?

A Yes, I do, sir.

Q On page 10592, on the
top of the page you say:

"The much discussed culvert solution is an
interesting one, and it may well work, but I
don't think that after construction is the
time to test it out."

My first question is on this paragraph, and in the
discontinuous permafrost area, how does the water move
down the hydraulic gradient, the sub-surface water move
down the hydraulic gradient?

A Could you clarify that?
I'm not exactly sure by what you mean, "How does the
water move down?"

Q Well, in what form, is
it in rivers, underground rivers, is it -- where -- I
assume that the water does move down a gradient. Is
right?

A Yes sir.

Q In a hilly country, of
course, and the gradient is somewhat parallel to the
ground surface.

A Yes, it would be beneath
a river, probably the best assumption would be that
it would parallel the water slope -- the surface water
slope of the river.

Q Well, is the movement of
that water down the sub-surface hydraulic gradient

P. Lewis
Cross-Exam by Templeton

1 in -- does it go in channels or does it go in channels
2 plus a general movement, a mass movement of water?

3 A I think in the situation
4 that I was referring to specifically, which was a gravel
5 bed river, that it would not tend to channelize to the
6 extent it might in another kind of material; that it
7 would tend to be a mass flow.

8 Q So in the Mackenzie Valley
9 where you're running parallel to the river, and there
10 is higher ground to the side east, there would be a
11 general movement, mass movement of underground water
12 towards the river? Towards the Mackenzie.

13 A I'm not directly familiar
14 with the Mackenzie Valley, not having worked there, I
15 haven't done any groundwater work in that area. But
16 there would certainly tend to be a movement from the
17 sides of the valley toward the Mackenzie River.

18 Q Would you call that a
19 sheet movement, or a mass movement?

20 A I wouldn't call it a
21 sheet movement, no, because a sheet is essentially a
22 two-dimensional thing, like a sheet on a bed.

23 Q Right

24 A So it would be three-
25 dimensional.

26 Q If you added another
27 dimension it might be a mass movement, for want of
28 a better term. Well, if you have this general movement
29 of water down a gradient, how can you predict or how
30 could one predict where to put a culvert to go through

P. Lewis
Cross-Exam by Templeton

1 the frost wall, or frost bulb, whatever you call it,
2 if it's in a gridual mass movement?

3 A Are we speaking about a
4 valley side, or about beneath a river in the context
5 in which I gave the testimony?

Q Well, I was really
speaking about the general valley rather than -- I
assume that you were saying there is movement of water
around the river, and I'm extending that in a discon-
tinuous permafrost area to saying -- I think I got
from what you said there is a mass movement in addition
to a somewhat concentration around the river.

A In the case in which I was
talking, there would be significant ground water move-
ment beneath the river. There would be ground water
movement in the active layer during the summer period.
This could be in any direction, depending on the local
slope. There also, of course, can be a movement in
talex in unfrozen zones within permafrost areas; but
I think the situation in which the culvert is proposed
to be used here at least in the context in which I wa
talking about it, was beneath the river. In a situation
in the winter where you have an unfrozen zone beneath
the river, the river has frozen to its bed, but on
either side it is also frozen solid. So you effectively
have a conduit for the passage of ground water beneath
the river with frozen broundaries at the sides as well
as the bottom.

1
2
3 Q Well, all right, let's
4 take the river example that you mentioned first.
5 Is this conduit going to conduct water all year
6 round?

7 A Yes.

8 Q So that as long as you
9 have sufficient flow in that there is not a danger
10 of the conduit freezing up, if you can take all the
11 heat away, if the water is enough to take the heat
12 -- supply the heat so it doesn't freeze up.

13 A I am not sufficiently
14 familiar with heat flow theory to know the exact con-
15 ditions under which a conduit like that would be kept
16 open solely by flow in the absence of some outside
17 source of heat.

18 Q Yes, but that is in
19 the -- we are talking now about the flow underneath
20 the river through the soil. Could we go down now
21 to farther south where you are in a discontinuous
22 permafrost area and I think that we established that
23 there is a general mass movement of water and what
24 I am saying is how do you predict where to put the
25 conduits in that case? How could one predict that?

26 A I really have no idea.

27 Q Would the flow, would
28 you expect the flow to be continuous all year round in
29 that? Supposing you put some conduits through in the
30 discontinuous zone and you put some conduits in at the

1 most likely spots and these conduits extended through
2 the frost wall that surrounded the pipe, would you
3 be able to -- would you expect that they would flow
4 --or would they be intermittent?

5 A This is in the discontin-
6 uous permafrost?

7 Q Discontinuous zone.

8 A I think that you could
9 have either situation. I think in some places it
10 could be discontinuous in the sense of a drying up of
11 supply, so to speak, in the winter months.

12 Q So the flow is intermit-
13 tent?

14 A It could be intermittent.

15 Q Right.

16 A But it could be
17 ous under other situations where you, for example,
18 have a source from a spring or a lake.

19 Q Yes, but could you
20 predict that ahead of time?

21 A With sufficient field
22 information I think you could, yes. You couldn't
23 predict it sitting in your office, but I think if
24 you got into the field you could.

25 Q Is there a danger if
26 it is an intermittent flow, that the conduit would
27 eventually build up and freeze solid, similar to
28 what happens in a culvert under a highway?

29 A I guess this would be
30 a possibility in certain circumstances.

Q So the location of these conduits would have to be very carefully taken so that they would have sufficient flow through them so that they wouldn't be liable to freeze up, is that --

A Well, certainly the location of the culverts would have to be taken with great care. The only situation with which I have personally looked at that solution for is the river situation in the continuous permafrost area, so I am just hypothesizing as to what the intentions of Arctic Gas are in that respect.

Q Well, I was really get around to say it may well work and I think your conditions are that a great deal of investigation is needed before you say that it is going to work.

A I certainly think that a great deal of additional investigation is needed. I think it is an interesting possibility. It remains a possibility, a very hypothetical solution at the present time.

Q Well, then if we could move on to page 10593, I think you on the top of the page, you suggest, you recommend that a field test of a culvert through the frost bulb be made to test out this theory or this -- I am not sure it is a theory, but the idea, and the problem I have is how would you make that test to take into account varying flows that you might expect or would you have to test a fairly wide range of flows from zero to -- or

1 over a period of say, equivalent in a winter season.

2 A Well, in order to
3 completely test something like that in terms of
4 taking into consideration all possible flows,
5 distributions of flows, timings of flows and things
6 like that, it would be undoubtedly prohibitive
7 expensive. I think it could be tested under situation
8 which appear from field measurements to be common
9 to the kind of thing that you are going to run
10 into that would be in terms of location.

11 Now, in terms of time it is
12 a much greater problem because of both short period
13 seasonal and year to year variations in ground water
14 flow, but if you could not measure the flow, then
15 you would have a much better idea certainly than you
16 do at the present time, as to whether it would
17 work.

18 I don't think I could
19 be 100% sure that it was going to work in every
20 case, but then I don't think you can be 100% sure
21 of anything.

22 Q Yes, that is right
23 think I was getting back, I don't know whether
24 answer to the last question was back at the culvert
25 -- or the conduit under a river, and I was back on the
26 mass movement of slopes where we don't -- I assume
27 know what the flows are at any time in any year so
28 there can be a very wide, wide range of flows.

29 MR. MARSHALL: Excuse me, sir,
30 I hesitate to interrupt Mr. Templeton, but I am not

1 aware of there being any evidence of proposed use of
2 culverts to contend with cross slope drainage. Perhaps
3 Mr. Templeton has something in mind that I should be
4 looking at.

5 MR. TEMPLETON: Well, I think
6 there was the suggestion that a small insulated
7 culvert would be placed through the frost bulb
8 to conduct the water from the uphill side to the
9 downhill side and there was -- there have been a
10 number of references to these culverts in the
11 testimony. I think I questioned Dr. Clark on it.

12 THE COMMISSIONER: Well, I
13 don't remember whether you did or not.

14 MR. GOUDGE: My recollection
15 sir, is that sometime back we heard the phrase coined,
16 the Templeton wall and -- set through it as
17 a proposal, I think from Dr. Clark, of using culverts
18 through the frost bulb on cross slopes, that's
19 my recollection.

20 THE COMMISSIONER: I remember
21 that, but I don't know whether that is what you
22 are talking about.

23 MR. MARSHALL: Well, perhaps
24 we can clarify this with Dr. Clark. I had understood
25 the culvert technique was being considered for
26 certain river crossings, particularly, say, in the
27 North Slope that Dr. Lewis has been examining. I
28 wasn't aware of its intended use in areas, say, in the
29 Mackenzie Valley, but this is something to check
30 with Dr. Clark.

1 THE COMMISSIONER: Well, wh
2 don't you carry on and if it turns out that you've
3 proceeded under a misapprehension, we will be advised
4 in due course.

5 MR. TEMPLETON: Yes, well,
6 I wanted to differentiate between the North Slope
7 area in the continuous permafrost zone and the
8 discontinuous zone because I think the problems
9 are different, but I can leave it at that. I think
10 there is only one other general question. When you
11 are talking about the Battele model you were
12 questioning some of the assumptions that were made
13 when the model was used. I wonder if it should
14 be a condition that if computer programs by either the
15 pipeline companies or the regulatory agency are used
16 to justify an action that the computer program and
17 all the criteria to set up the program
18 of it, should be made available to the other. I think
19 you are questioning the matter of saying, well, I
20 have proven that by a computer program, but if you
21 don't understand what went into it it is ~~very difficult~~
22 to accept it, is that what you are saying regarding
23 the model?

24 A What I said with respect
25 to the Battele model itself was that I wasn't competent,
26 it is not within my field of expertise to criticize
27 that model, or the assumptions that actually went into
28 the model. What I criticized was the particular input
29 data which was used for the Firth and Malcolm Rivers
30 and I also suggested that a model is simply a

P. Lewis
Cross-exam by Templeton

1 representation of reality, it may or may not approach
2 that reality at all closely and that there should be
3 a considerable actual field data collected to use as
4 input data and to use as test data for the model before
5 it can be assumed reliable at all.

6 Q Yes, saying the black
7 box says something isn't enough, you have to know --

8 A Well, certainly the Battele
9 model itself is a black box to me.

10 MR. TEMPLETON: Thank you,
11 that is all the questions I have, Mr. Commissioner.

12 THE COMMISSIONER: So we
13 know that the Battele model is a black box.

14 MR. TEMPLETON: I beg
15 your pardon?

16 THE COMMISSIONER: No
17 wonder where that had gotten us, that last answer,
18 but --

19 MR. GOUDGE: I think it had
20 gotten us to lunch, sir.

21 MR. TEMPLETON: Well,
22 I think the point that -- I think that either the
23 Pipeline company or the regulatory agency somewhere
24 down the pike might well be using mathematical models
25 of one kind or another and saying well, I have now
26 run that on the computer and the results are so and
27 so and therefore that is right, and I am trying to --
28 Dr. Lewis is familiar with models and perhaps not
29 this one, but he is suspicious of them and I think
30 that any organization that puts in its -- that is coin

1 to use a computer model to prove a point must demon-
2 strate the model and what went into it. I am
3 sorry, I think that might have been another speech
4 that I keep giving.

5 THE COMMISSIONER: Yes, thank
6 you, Mr. Templeton.

7 MR. GOUDGE: Can we adjourn
8 now, sir?

9 THE COMMISSIONER: Yes,
10 we will adjourn for lunch and return at two o'clock.

11 (PROCEEDINGS ADJOURNED UNTIL 2 P.M.)
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(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. GOUDGE: Mr. Commissioner,

before we reconvened this afternoon I had a chance to talk to Mr. Marshall over the lunch hour about some of the facts we have in our possession concerning startup and shutdown dates. These are facts in letters to Inquiry staff members from district superintendents in the

Fort Simpson area and the Inuvik area. While I suppose technically they can't be proved since their authors aren't available, what I would propose is that they be tendered as exhibits; if any of the parties have objections to that, perhaps before I do so they could feel free to examine the documents and then make their

objections, and the facts speak for themselves and I think it may be of use to all parties.

THE COMMISSIONER: Well, I don't think that the Inquiry is bound by the Rules of Evidence and the letters, I think, are admissible as evidence. If someone objects to them they can call for the appearance of the author to be cross-examined.

MR. MARSHALL: I understand one

of the authors has passed away.

MR. GOUDGE:

I can't conceive, frankly, sir

that there will be any objection to any of the facts in these letters. I think that's almost certain not to be the case. I propose then to tender these two letters as exhibits, and perhaps the secretary can mark them.

(2 LETTERS MARKED EXHIBIT 280)

MR. GOUDGE: The other matter,

sir, before the cross-examination of Dr. Lewis is

resumed is that I have now and have distributed a list of documents and reports used by Dr. Lewis in his evidence in chief, which I think the secretary has.

THE COMMISSIONER: All right.

MR. GOUDGE: I think next on the list, sir, would be Mr. Bayly.

PETER LEWIS, resumed:
CROSS-EXAMINATION BY MR. BAYLY:

Q Dr. Lewis, I notice from your resume that you worked along the coast of the Tuk Peninsula in 1974 studying coastal processes. I understand from Mr. Goudge that part of your study was involved in looking at the Tuktoyaktuk area and in particular the harbor there, and the natural processes the Beaufort Sea on that area. Is that the case, sir?

A Yes, it is, except it was the summer of 1973.

Q And during that summer you made observations of this harbor, and as you probably know, one of the possibilities that has been suggested that Tuktoyaktuk might be a staging area and this harbor might be important, can you tell us what you know of this harbor and its potential, and the plans of the government that you've heard concerning it?

A Well, I was involved with it from a research point of view in the summer of 1973, and since then I've been involved to some extent with the Department of Public Works who are concerned both with the shipping channel itself and with

storms which I've already talked about in the context movement is concentrated during periods of summer continuing dredging. It is possible that sediment make it deeper and keep it deeper without a fairly would be a mistake to assume that you could easily continuously shallower. However, I think that it sort of equilibrium, in that it is not going to get which is effectively bar-building, is probably in some suspended in the water. The process at the mouth, itself, but primarily silts and clays from sediment continuing. There is slow infilling in the harbor A It is something which is

is continuing and likely to make the harbor shallower? that siltation process at the mouth of something, that Q And is that a process,

of the harbor, so it's much shallower at the entrance. which tends to cause a bar in effect across the mouth is considerable sediment transport across its mouth ground ice. It is, however, shallow at its mouth. There deepest, probably due to the melting out of massive valley. It's fairly deep, 60-70-80 feet deep at the length. The harbor is probably an old drowned river retreating cliff, the coastline along most of its A Essentially it's a rapidly

when you were there?

Q What did you observe

so this is how I've been involved. Beaufort Sea. We spent a month or so there in 1973, of the town to keep the town from washing into the stabilizing the coastal cliffs along the seaward side

P. Lewis
Cross-Exam by Bayly

of rivers, and that there may not be a tremendous amount of sediment movement on a regular basis. However, these storms can occur at any time and any channel, for example, which might be dredged could be in-filled at any time.

P. Lewis
Cross-Exam by Bayly

Q And having studied this whole Tuk peninsula coast line, and I understand co-operated with the Department of Public Works, have you an opinion as to whether there is a deep water harbour on the Tuk peninsula which would be an exception to the kind of condition that you have described at Tuktoyaktuk?

A No, I am not aware of any such harbour along the Tuk peninsula. There was a study done by the Department of Public Works, a report was published in the early 1970's which looked at the question of establishing a deep water portal along this part of the Beaufort Sea, and the conclusion that they came to was that the only feasible place was Babbage ^{Bight} on the Yukon coast and that Tuk harbour was not suitable, Herschel Island was not suitable, etc.

Q And I understand that you don't have the name of that report readily at hand but could supply that to your counsel?

A I could supply that;

it is referred to in the report in my list of references, McDonald and Lewis, 1973, that report, the D.P.W. report is in the bibliography of that.

Q Yes, perhaps that name could be supplied to us, Mr. Commissioner, and that report could be looked at.

MR. GOUDGE: Yes, sir, we will

do that.

MR. BAYLY: Q And I gather,

1 Mr. Lewis, that this coastline on the Tuk peninsula
2 is a rapidly changing coastline for a variety of
3 reasons, partly the sea itself and partly the nature
4 of the flat land, is that correct?
5 A Yes, it is a rapidly
6 retreating part of the coast. We have done some
7 comparative photogrametric measurements between the
8 early 1950's, 1969 and 1972 and we found retreat in
9 excess of 20 to 25 meters over the full time period
10 of which much occurred between 1969 and 1972 during a
11 major storm which occurred in September of 1970.
12 For example at the R.C.M.P. station in Tuk the
13 retreat during that 1970 storm was as great as the
14 retreat over the preceding 15 years, so it is a
15 very rapidly retreating coastline. It is primarily
16 because it is unconsolidated sediments with a large
17 amount of ground ice in them.
18 THE COMMISSIONER: Excuse me,
19 I just want to make sure I understand this. So
20 what are the consequences insofar as Tuk's suitability
21 as a harbour is concerned?
22 A I think the consequences
23 are probably twofold. One is that there is a large
24 amount of sediment moving along that coast and it
25 tends to form either beaches along the cliffs or bars
26 in areas where there is a harbour like Tuk, and that
27 if you tried to dredge a channel through those bars,
28 well, you could do it, but it would be likely to fill
29 up at any time during one of these storms. That is
30 the first thing.

1 THE COMMISSIONER: So you would
2 have to undertake continuous dredging?
3 A I don't know if you would
4 have to undertake continuous dredging. As I say I
5 think, and this is a guess based on work in other
6 areas, that the sediment transport is concentrated
7 during these storms so there can be a year such as
8 the summer of 1974 where there were no storms and in
9 which case you might not have to do any dredging,
10 but at any time you would have to be prepared to
11 dredge.
12 THE COMMISSIONER: And what
13 would be the extent of the dredging the whole harbour
14 or from the harbour and the passage into open water
15 or what?
16 A I think the harbour
17 itself is quite well protected and quite deep. I
18 think you would be working effectively offshore from
19 the island in Tuk harbour.
20 Your shipping channel runs
21 along the east side of that island.
22 THE COMMISSIONER: And what
23 would be the extent of the dredging required then?
24 A I am not sure how far
25 offshore you would have to dredge, it would be a
26 fair distance, miles.
27 THE COMMISSIONER: What was
28 the second point you were going to make?
29 A I was going to say that
30 the island in Tuk Harbour is retreating quite rapidly

1 too and could disappear fairly shortly in which case
2 the harbour would not be protected as it is now and
3 also of course the cliff along the seaward side of
4 Tuk itself is retreating very rapidly and I am sure
5 as you know, the people of Tuk are very worried about
6 that.

7 THE COMMISSIONER: Yes.

8 Foothills told us last month that they were considering
9 bringing in oil required for fuel for construction
10 of the pipeline by tanker around the Bering Strait
11 around Point Barrow to Tuktoyaktuk. I think they said
12 to Tuktoyaktuk -- a 35,000 ton vessel, as I recall.
13 Does that -- do you have any comment to make on whether
14 that is a practical proposition in light of the
15 conditions that you've observed at Tuk harbour?

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A I'm not certain what the draught of a vessel would be.

Q Well, neither am I.

A But I think that most

consideration for deep water ports has suggested that Tuk Harbour is not a satisfactory area, and that probably the only satisfactory area is on the Yukon coast.

Q Babbage Right?

A Babbage Right.

Q That is east of Herschel is it?

A Yes, it is. Yes, it's

about half-way between Herschel and the west side of the Mackenzie Delta, and it's a very steeply retreating cliffed area, but the thing there is that all of a sudden it's been carried away from that area rather than into it, and the offshore gradient into the ocean is very steep, much steeper there.

THE COMMISSIONER: I'm sure I've been there. You mean the mouth of the Babbage River?

A Just east of that.

THE COMMISSIONER: Yes, yes.

MR. BAYLY: Q One more thing,

Dr. Lewis. One of the other possible proposals of the delta producers is to bring material in through the

Husky Lakes by dredging the channels from the Beaufort Sea into the Husky Lakes to make barge transportation possible there. Can you comment on that waterway and what the conditions would be in that area that might

1 either make that possible, impossible, or difficult?

2 A I'm afraid I haven't

3 worked in that area. I don't know it personally; I've
4 flown over it but I've not worked in Liverpool Bay or
5 the Husky Lakes. I know that there certainly are
6 shallow areas in there, but I don't know what the
7 sediment transport conditions would be.

8 Q In that area, I under-

9 stand, we're dealing with a similar looking coastline,
10 whether it's made up of the same materials or not you
11 probably wouldn't be able to say at this point.

12 A Well, Liverpool Bay and

13 the Eskimo Lake, of course, would not be exposed to the
14 same kind of erosional activity from waves that the
15 seaward side of the Tuk Peninsula would be, so one could
16 expect the cliffs to be somewhat more stable.

17 Q All right, so the really

18 unstable area, as you come farther west, and get more
19 exposure to the possible major storms that you've
20 referred to.

21 A When you have exposure

22 to the full size of the Beaufort Sea to generate waves,
23 then the erosion activity will be greater.

24 MR. BAYLY: Yes: Those are all the

25 questions I have, thank you.

26 MR. HOLLINGWORTH: I have no

27 questions for this witness.

28 MR. BELL: I have no questions.

CROSS-EXAMINATION BY MR. MARSHALL:

Q I understand Dr. Lewis

has checked out of the hotel, so I'll try not to keep

him beyond plane time. I have a few questions, Dr.

Lewis. The first is really just a point of clarifi-

cation, in your evidence you spoke about difference in

definitions of active channel and the active flood

plain between your work and that of N.E.S., and I'd

like to go through some of that with you, sir, just to

see if really we're not both talking about the same

thing but perhaps using different definitions.

In your evidence, Volume 70,

page 10570, you define the active channel as including

all parts of the river valley below the level of bank

full stage, which in turn is defined as the average

level of the highest bar surfaces whose primary

plant cover does not include shrubs. Do you recall

that?

A That was the working

definition we used in our study, yes.

Q And further on page 10569

you stated that:

"On many rivers the flood plain level will be

exceeded by several floods each year, while the

low terrace on the other hand will be flooded

much less frequently, say for example less

often than the mean annual discharge which

occurs every two to three years."

A I believe I made a mistake

there, which I corrected. It's the mean annual flood,

which is a different thing from the mean annual discharge
This would be the average of the highest flow in the
year, rather than the average flow during the year.
Q Well, comparing your

definitions with those of Arctic Gas in their response
to Question 39 in the Responses to the Pipeline
Application Assessment Group Requests for Supplementar
Information, do you not agree that what Arctic Gas has
termed "the active flood plain with its various sub-
channels and a braided river" corresponds to your
"active channel"?

A I would say that what
Arctic Gas has called "flood plain", I would call
a "channel", yes.

Q Yes, and the inactive
flood plain of Arctic Gas corresponds to your flood
plain or low terrace, depending on the frequency with
which it is flooded.

A Yes.

Q Now, according to your

definitions, if gravel were to be removed from the
unvegetated gravel bars in a braided gravel river,
would you regard the operation as taking place within
the active channel and not within the active flood
plain, as stated by Arctic Gas?

A If the gravel was to be

excavated from anywhere below what I would call bank-
ful stage, I would consider it to be the active channel
That would be the unvegetated bars.

Q Yes. Now in your

terminology, sir, is the active channel to which you

were referring in your 1973 report from Donald & Lewis, pages 3 and 4, where you're dealing with implications and recommendations, and you made the statement:

"From a geomorphic point of view, limited use of river gravel for construction purposes could be considered, keeping in mind --"

and then you list a number of factors.

A Yes, that was the active

channel, and I believe I reiterated that in my evidence.

Q And the evidence has been

that -- and there will be further evidence, I guess, as part of the second phase of the hearing -- that Northern

Engineering plan to take some gravel from bars in the active flood plain, or your active channel above the water level at the time of stockpiling.

A Yes.

Q Yes, and do we then get to

the point that we're both really talking about the

same thing, but using slightly different definitions?

A Yes, I think the key thing

here is a matter of definition. I think that Arctic

Gas' definition changed, and I just felt that Arctic

Gas was not using a good hydrologic definition, that

Dr. Cooper's definition agreed with my definition and

that Arctic Gas should say that they intend to mine

from active channels.

Q I see, fine.

1

2

pertains to your testimony as found at pages

3

10572 and 3, Volume 70, and there is reference made

4

to the seismic refraction data indicating 100 to 125

5

feet of fill at the proposed crossing of the Blow

6

River and 40 to 60 feet at the proposed crossing

7

of the Malcolm River. Further on page 10575 of the

8

transcript reference is made to recent geophysical

9

information which suggests that the sub-riverbed

10

materials beneath the main low water channel at the

11

proposed Malcolm River crossing was unfrozen to a

12

depth of about 25 feet in August 1974. Have I

13

summarized that accurately? Just a couple of questions

14

pertaining to that, sir.

15

Firstly, would you elaborate

16

on the nature and extent of these geophysical investi-

17

gations as they pertain to rivers on the Yukon North

18

slope and as well comment on whether the results of

19

the geophysical investigations have been verified by

20

drilling.

21

A

To answer your last first,

22

they have not been verified by drilling. The surveys

23

were carried out by Dr. Jim Hunter of the Geological

24

Survey of Canada and he did a number of floodplains in

25

1972 using Camer[?] seismic outfit and in some cases

26

could not get enough penetration to tell what was

27

going on. In the case of Blow River he felt that he

28

had and those figures are published in our 1973 report.

29

The Malcolm River river crossing

30

work was done in 1974 in August and it was done with

explosives and that work has not been published as

yet.

Q Will the work be

published, sir?

A Yes, it will and it

will be published either as a G.S.C. open file or in
the Geological Survey Report of Activities within

the next few months.

Q I see.

Now, sir, as part of your

investigations or those of G.S.C., is any work underway
to determine the origin of the several major springs

that occur on the coastal plain in the vicinity of the

Firth and Malcolm Rivers?

A There is no work being

done by us on this problem at all.

Q On page 10577, again

volume 70 of the transcript, reference is made to

the fact that your field party has gauged the

Babbage River and Deep Creek at their mouths for

parts of the last two summers. I was wondering,

sir, if you have also measured precipitation, and

specifically rainfall?

A We have measured precipi-

tation at our camp site which is at the mouth of the

Babbage Delta on Kay Point. We have not measured

precipitation further up the Babbage River or Deep

Creek drainage basins where it might be somewhat more

relevant.

Q I wonder if that information

1 that you do have, sir, might be made available.

2 A The information on

3 the river discharges and water levels is being collected

4 by a PhD. student at the University of British Columbia

5 and it will be in his report of activities to be

6 published again either late this year or early next

7 year.

8 Q That would be an open

9 file report?

10 A That is published and

11 available to anyone.

12 Q I see, fine.

13 On your testimony reference

14 was made that your field studies near Kay Point will

15 be continued in 1976. The plan also to continue to

16 monitor stream flow and precipitation at sites on

17 the Yukon North Slope --

18 A No, the only place

19 where we are working is at the mouth of the Babbage

20 River and along the short section of coast around the

21 Babbage River, the Babbage River and Deep Creek

22 will be gauged for that summer. We will continue

23 operating our weather station at Kay Point, but that

24 is the only place where we will be working.

25 Q Now, sir, on page 10581

26 of the transcript there is a statement made that I

27 will read to you, quote:

28 "Now, the ice while it is on the bed and

29 as I said, most of these rivers are frozen

30 right to the bed, protects the bed from

scour and thus exhibits bed load

transport. Even after the ice

has gone, the frozen bed and banks are

more resistant to scour than they

would be later in the summer. All

of this tends to reduce the effect

which spring flood has on bed

scour and bank erosion."

And then, sir, on page 10589 you make a statement

with regard to the proposed pipeline, quote:

"A new icing may grow at the pipeline

location causing a channel constriction...."

I think it was, I believe there was a typo in the --

A Yes, it was constriction.

O -- in the transcript.

"...causing a channel constriction with

resultant effects on the channel stability

depth of scour, etc., etc., it will effect

the bed of the channel"

End quote. Sir, I am just having a little difficulty

reconciling those two statements and I wonder if you

could comment on them.

A Well, in icing particular

-- perhaps I should start. The first statement,

flow in the spring tends to be overtop of the winter

ice cover and during spring flood this ice cover does

provide some protection to the bed of the stream.

O Yes.

A In the case of an icing

if it is a perennial icing or even if it is an icing

1 which only lasts well into the summer, you have
2 got an effective ice which lasts much longer where
3 channeling through the ice can occur and therefore
4 where the waterflow actually has to cut through the
5 ice and is constricted by the ice so you have more
6 water having to pass through a smaller area, and
7 therefore a higher velocity and therefore probably
8 more scour.
9
10 It is not the case that
11 you would have in the simple river ice situation where
12 the flow tends to be over the ice because in the
13 case of an augeis the augeis would tend to
14 build up to the level of the piezometric head
15 and at least in the observations we have from the
16 Firth and the Malcolm is much thicker than river
17 ice would be, say, in the case of the Firth or the
18 Malcolm would only occur in the low water of tides,
19 whereas, you have seen, I think from my slides, and
20 probably yourself, that the augeis deposits are
21 much more extensive. It is kind of a different
22 scale of thing.

Q Thank you sir. Sir, you

made a comment at 10582 of the transcript that you'd

like to see some actual measurements of scar holes in

North Slope rivers made and related to bankful conditions

Sir, I refer you to Volumes 5 and 6 of the reference

book on water crossings and the amount of data on

northern rivers that has been obtained for Alaska.

I take it you would be familiar with at least some of

this material, would you, sir?

A I'm not familiar with

Volumes 5 and 6.

Q Well, as I understand it,

sir, there is data of the type that you feel there

ought to be that's contained within those Volumes 5 and

6. I was just wondering generally if you'd agree that

data on rivers in Alaska would be of help in analyzing

Yukon-North Slope rivers.

A I think the data on North

Slope rivers in Alaska would be very helpful to Yukon

North Slope rivers.

MR. MARSHALL: Thank you, Dr

Lewis. Those are all my questions.

THE COMMISSIONER: Well, that

you very much, Dr. Lewis, in giving us your time again.

We certainly appreciate it very much.

A Thank you, sir.

(WITNESS ASIDE)

MR. GOUDGE: Perhaps we can ask

Dr. Adam to resume the stand to be cross-examined.

K. Adam

THE COMMISSIONER: We'll adjourn until Dr. Adam gets set up, and we can stretch our legs.

(PROCEEDINGS ADJOURNED FOR FEW MINUTES)

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

KEN ADAM, resumed:

THE COMMISSIONER: Well, Dr.

Adam, before you're cross-examined maybe I could ask

you if you would like to comment on the matters that

I raised this morning for Dr. Clark's consideration.

When you gave evidence in June you said that because

of the problem of frost heave, you felt that chilling

should cease somewhere around -- I've forgotten, Vermont

Wells or Fort Simpson?

A Willow Lake River.

Q Willow Lake River, and

I don't think you went into the whole frost heave

question in the same detail as Dr. Williams did, but

on this issue I think I'm going to need all the help

I can get, if you want to discuss these matters, please

go ahead and do so now. I'll give counsel an opportunity

to cross-examine again, I'm speaking of Mr. Marshall

now and Mr. Hollingworth, either before you leave on

this occasion or when you come back with the Board later

on in the fall. But go ahead, and discuss it if you

wish to because I'm very interested in the subject.

A I am prepared to discuss

this problem. Of course, I did have something to say about

it in my testimony. I'd probably start off by saying

that we have been concerned about frost heave problems

from before 1972. Interim report No. 2 of the E.P.B.

dated June, 1972, states some of these concerns. In the Board's final report which is Exhibit 135, in chapter 1 of Volume 4, frost heave was indicated to be a problem of concern of the Board.

Now, as you've stated, that report and my earlier testimony recommended terminating chilling at or near the Willow Lake River. Of course, again as you are aware, Dr. Williams expressed similar concerns about the frost heave problem. I have read his testimony and in general I concur with what he said. It's really the uncertainty of the validity of the shutoff pressure concept that has raised this doubt with the Board, and we see as a term and condition that chilling be stopped at the Willow Lake River. Now, I think I probably would say something about our approach or our criteria to how we arrived at this conclusion.

We see this problem basically one of a trade-off between unknown factors which we consider to be frost heave and drainage disruption, against what we consider a more known problem and one that engineers are more used to handling, that's thaw settlement. I might just point out that I don't see this problem as one on which the project necessarily hangs. That is to say we feel that with proper trade-off, that is you're actually trading off one problem coming from the north and one going to the south towards the north, we think that if a proper trade-off is made that we can certainly reduce the potential problems.

Now, as far as the above

freezing pipe in the discontinuous zone, it results

basically in permafrost thaw and settlement, depending

on the ice content, and --
THE COMMISSIONER:

Q Excuse me. You said

above freezing pipe?

A Well, if it's not

chilled in the discontinuous zone.

Q Above freezing, yes, yes.

A And then we feel settle-

ment is a problem that can be designed for.

Q Right.

A Now, observations of

say seismic lines, other cleared areas between Fort

Simpson and the Willow Lake River indicate that the

worst problem associated with thaw settlement is really

not the problem of thaw settlement itself, but it's

more due to localized erosion, and this was pointed out

by Strang in a paper in 1973.

Now, if you use a cold pipe in the discontinuous zone in effect what you are doing is extending the continuous permafrost zone further south, really over the entire length over what you are chilling and this, we see as leading to a potential frost heave problem, potential drainage disruption problem, really both of which we feel there is some question about the technology to handle those problems. So really summing up our case on that, really what we are saying, at least from an environmental point of view, we are happier with worst case problems resulting from settlement than we are with worst case problems resulting from frost heave. Now, earlier when we were trying to assess the impact from thaw settlement we came up with criteria, and I might add that it was in an environmental group where everybody had their say as to what we felt would constitute moderate impact or major impact from thaw settlement. We chose that if you could notice the settlement over 5% of the area we thought we could call that moderate impact. If it exceeded two feet of settlement over 5% of the area we felt that that constituted major impact. I should stress that this was done on a regional basis. We are not for example saying that we have got a 1,200 mile pipeline and you can have two feet of settlement or more over 60 miles and you pick the 60 miles. It is done on a much shorter basis and it's some areas would settle and others would

not in the discontinuous zone.

Now, on that basis we had

some bore holes and these are shown in this volume

here. It's appendix iv of Interim Report III of the

E.P.B. and if I could just take a moment to

look at that, these bore holes indicate that on the

basis of 51 holes on the region from Jean Marie Creek

to Willowlake River, on the basis of 51 holes, 29%

of them had permafrost. 10% of them had excess ice.

Now, on that basis --

THE COMMISSIONER: 10% of --?

A 10% of the holes --

THE COMMISSIONER: Of the

51 holes.

A -- had some excess ice.

Now, we also have the distribution of excess ice in

those holes and it is fair to say that the majority

of the excess ice is in the upper portion of the

holes, that is, above the three or four foot level.

Now, when you go to estimate

the amount of settlement that is going to occur from

that we find that it is substantially less, in most

cases, than two feet and we feel that it's not going

to be over a very extensive area, or I might say

length along the pipeline. So we feel we can accept

that. As soon as you go immediately north of the

Willowlake River and I have to admit that it is a

gradual thing and this analysis is done again on a more

regional basis, but on the next region north, that is,

the Willowlake River to the Saline River, we have a

1 few more holes, for example, I should mention that
2 these are based on geologic units, but on one particular
3 geologic unit I pick at random here, we have 82 holes,
4 75% of them have permafrost and 62% of them have
5 excess ice.
6 When we look at the percentage
7 of excess ice in any given hole, we find that it's more
8 and when we go through the thaw settlement exercise
9 very crudely --
10 THE COMMISSIONER: Excuse me,
11 you lost me there. When you look at the percentage
12 of excess ice in any given hole you find it is what?
13 It is more liable to --?
14 A Yes, in general there
15 is more than there was south of the Willowlake River.
16 THE COMMISSIONER: Yes, right,
17 right, right.
18 A And when we run through
19 the calculations we find that you can find holes
20 where you can get two, three and even more than
21 three, but not substantially more than three feet
22 of thaw settlement, and with the percentage of holes
23 containing excess ice, we feel that this is going
24 to result in thaw settlement to the extent that we
25 would consider it a major impact.
26 THE COMMISSIONER: That is
27 from Willowlake River north.
28 A North.
29 THE COMMISSIONER: That is
30 why you chose Willowlake River as the cutoff?

1 A Yes, we came on the
2 basis of that to the conclusion that the Willowlake
3 River, was, if not the cutoff place at least in the
4 ballpark as to where we would like to see the cutoff
5 point. Now, as I said we don't see the project
6 really hanging on that one concept. In fact, and I
7 just throw this out as a possibility, that if
8 you ran into frost heave problems even north of the
9 Willowlake River, you have, at least the company, I
10 would think, would have the alternative of switching
11 off the coolers.
12 THE COMMISSIONER: Believe
13 it or not that had occurred to me, but that seemed
14 that there must be some --
15 A Well, I am sure that the
16 have money invested in these facilities, but it is an
17 idea that at least maybe should be looked at.
18 THE COMMISSIONER: Well, let
19 me ask you a question just to see where we are at
20 here.
21 Q What concerns me about
22 this is that Arctic Gas, concerned about what Dr.
23 Clark described as the "horrendous" geotechnical
24 problems that would be confronted by running above
25 freezing gas through a pipeline buried in permafrost,
26 hit upon the ingenious notion of chilling the gas.
27 Then they created a problem for themselves because
28 of the phenomenon of the water in the unfrozen ground
29 being drawn to the frost front.
30 Now, from that point from where

1 everybody has said here, by everybody I mean Dr.
2 Clark and his colleagues, Dr. Williams and you,
3 you all appear to be dealing with something that
4 is new and that no one is entirely certain about.
5 Now, we have this disagreement
6 between Dr. Clark and his colleagues on the one hand
7 and Dr. Williams on the other hand. Williams says
8 they have very seriously underestimated the so-called
9 pulling forces and thus they have underestimated the
10 extent of likely frost heave, differential heave over
11 a 20 or 30 year period.
12 Now, you said that you agreed
13 generally with Dr. Williams. Do you agree with him
14 that they have underestimated the pulling forces and
15 thus if that is so, their conclusions about what is
16 necessary to bring to bear the so-called shutoff
17 pressure, are not appropriate, not valid. That is the
18 consequence of what Dr. Williams says. Now, do you
19 agree with him that they have seriously underestimated
20 the pulling forces and thus the extent of frost heave
21 and therefore their conclusions regarding what will be
22 necessary to exert or to impose the appropriate
23 shutoff pressure are not valid. I mean, that's after
24 weeks of listening to all of this, that seems to be
25 what everybody is arguing about.
26 You say, well, you seem, it
27 I may so so with respect, you haven't come quite to
28 grips with that. You have said, well, we don't know
29 enough about that so we will move the point where we
30 terminate chilling northward along the route and then

1 at least we are dealing with permafrost thaw and
2 subsidence and not with this beast that we just don't
3 know enough about,

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1 At any rate, what's your
2 view on the Williams thesis or whatever it is?
3 A Well, it's true that we
4 certainly have doubt about the concept of the shutoff
5 pressure. I think with regard to Dr. Williams' testi-
6 mony, we feel we agree that frost heave has been under
7 estimated but--and its pulling forces, as you have
8 described. However, I would be reluctant to say that
9 there is high -- or you would expect them to be as high
10 in the field as some of the figures that Dr. Williams
11 quoted from laboratory results. I think it's
12 fair to say that we feel that the forces are more than
13 have been estimated by N.E.S.
14 Q Well, thank you. Well,
15 carry on with whatever you were going to add and then
16 let these gentlemen cross-examine you.
17 A Well, I think the only
18 thing I'd have to say to end off is that we try to
19 view things from an environmental point of view and
20 really everything we've done in this regard has been
21 more to that end than in the design of the pipeline,
22 although a rupture of the pipeline certainly has impli-
23 cations as far as environment goes.
24 Q But they say that
25 engineering considerations and environmental considera-
26 tions are opposite sides of the same coin and that
27 seems to me a fairly sound proposition as a general
28 rule. At any rate, I interrupted you again, so --
29 A That's about all I had
30 to say on the subject.

MR. GOUDGE: Sir, I canvassed

counsel in terms of the cross-examination of Dr. Adam

and Mr. Bayly and Mr. Bell, I think, have advised me

they have no questions for Dr. Adam, and Mr. Marshall

would be next, and then ^{if} Mr. Hollingworth has any

questions I think he would go then, I would conclude.

THE COMMISSIONER: All right.

Subject to Mr. Hollingworth being entitled to the reserve

when the right to cross-examine/Dr. Adam returns with the Board.

MR. GOUDGE: Yes, sir.

THE COMMISSIONER: All right.

MR. MARSHALL:

view of

Sir, in the discussion

that you've been having with Dr. Adam pertaining to

some matters raised in earlier testimony, it may be

that we'll want to cross-examine Dr. Adam a little

further once we've had a chance to consider his

evidence.

THE COMMISSIONER: Well, you can

come after Mr. Goudge this time around, or you can

reserve your rights, or you can -- I don't mean reserve

your rights, but reserve -- carry on again when he

returns with the Board. This seems to me to be an

important question, and if you've got more questions

when he returns again with the Board, that's fine with

me.

MR. MARSHALL: Fine, sir.

THE COMMISSIONER: Let's get

to the bottom of this.

K. Adam
Cross-Exam by Marshall

CROSS-EXAMINATION BY MR. MARSHALL:

Q Yes, I'd like to start,

Dr. Adam, with the last point that you were dealing

with with the Commissioner, and that is whether or not

you're in general agreement with Dr. Williams as to the

pulling forces, and as I understood your evidence you

say that generally you feel that the pulling forces

would be higher than those that have been estimated

by N.E.S., but you don't feel they would be as high as

those that have been suggested by Dr. Williams. You come

in somewhere in the middle.

A Yes, I would say so.

Q Now, to begin with, when

you say "we feel", who is encompassed within the

"we"? It's yourself, I take it, and who else?

A Well, the Board itself

has certainly discussed the frost heave problem more

than once. I'm partly reflecting their views and within

our own group, that is the support group to the Board,

there have been many people that have had input to the

assessment of the frost heave problem.

Q Well, let me start, if I

may, with this. You are a consultant to the Board.

You are not a member of the Board itself, is that

correct?

A

Correct.

Q You're a professor at the

University of Manitoba?

A

That's correct.

Q

And you do consulting work

1 to Templeton Engineering?

2 A That's correct.

3 Q And Templeton Engineering

4 provides much of the support work to the activities of

5 the E.P.B.

6 A That's correct.

7 Q And now you say when you

8 saying "we" in the support group, I take it you mean

9 "we", the people involved with Templeton Engineering th

10 are assisting the activities of the Board? Or are there

11 others?

12 A Yes, and independent test

13 labs, the soils group that's associated with the compan

14 Q They are doing strictly

15 technical work at say the request of yourself or other

16 professionals, are they? Strictly lab analysis.

17 A No, certainly not strictl

18 lab analysis. Mr. Herwitz has considerable experience

19 in the north, a lot in Northern Manitoba, but he

20 was the person that was present when this drilling

21 program that I was quoting from just before, he was at

22 this site when the bore holes were put down and he

23 personally logged the holes.

24 Q It seems to --

25 A Besides him, George Howe

26 who is a geotechnical person, has done most of the

27 impact work resulting from frost heave for the Board.

28 Q Well, sir, it seems to

29 me that there are two points, and perhaps you can

30 agree with me about this and we can treat them as separ

subjects. One is, I should say to begin with, they are clearly inter-related. One is the determination of the last point of chilling, and you went through the exercise of how this had been determined by the Board and I want to deal with that separately. The other point though, it seemed to me, was with respect to Professor Williams evidence, that the pulling forces would be much higher than those predicted by N.E.S. Now, can we deal with them as two separate subjects?

A I would think so.

Q Now to begin with then,

in Dr. Williams' evidence that was given fairly recently before this Inquiry, and I was wondering whether or not his evidence pertaining to the pulling forces and their magnitude is a matter that has been discussed by the E.P.B.

A No, I doubt if the matter of the pulling forces themselves have been discussed.

Q So then when you say,

"Yes, we are in general agreement with Professor

Williams about the pulling forces," who are we

talking about then? We are not talking about the Board

because the Board hasn't considered it.

A Yes, that's a fair

statement.

Q Yes.

A We are basically talking

about George Howe and myself in this instance.

Q George Howe and Yourself,

and George Howe is with Templeton Engineering?

A That's correct.

Q Now, when you say that you

have generally agreed with Dr. Williams' evidence with respect to the magnitude of the pulling forces, what are you basing that opinion on, sir, simply reading his testimony or are you basing it on experimental work that you have done, or what is it that you're basing it on? A No, we certainly haven't had time even to really study it. It's basically on a reading of the material.

K. Adam
Cross-exam by Marshall

1 Q Well, is it fair to say
2 sir, and I don't want to be unfair to you at all, is
3 it fair to say it is simply a feel that you have
4 got about it? It is nothing more than that,
5 that you agree generally with that proposition, all
6 you have done is read his evidence on it.
7 A That is correct. I
8 think I would say that certainly his evidence went
9 a long way to reinforcing our position.
10 Q Well, what had your
11 position been based upon, sir? Had you done any
12 experimental work in this area as to the pulling
13 forces exerted on the freezing of soils?
14 A Not in connection with
15 Board work I haven't.
16 Q Well, have you done
17 any at all, sir?
18 A Yes, I have personally,
19 but not in the context of frost heave problems.
20 Q What did that relate to,
21 sir?
22 A When I took my PhD I
23 majored in a subject area called flow through porous media
24 and in that we deal with all sorts of porous material,
25 fine grained materials. I am certainly familiar
26 with the principles of the forces set up by surface
27 tension and that sort of thing and these same principles
28 are part and parcel of the frost heave problem.
29 Q And this is something
30 that you were looking at as part of your PhD work?

1	A	Yes.
2	Q	When was that, sir?
3	A	1967.
4	Q	Have you done anything on
5		the subject since then, sir?
6	A	Yes, not directly
7		measuring forces or anything of that nature, but
8		I have done work on modelling one soil with another,
9		with another soil, completely different and these
10		principles enter into that subject.
11	Q	Does this relate in any
12		way to prediction of frost heave?
13	A	Nonewhatssoever.
14	Q	Nonewhatssoever, I see.
15		Now, you mentioned that you had read Dr. Williams'
16		testimony that related to the pulling forces that
17		he predicts would be generated. Have you read any
18		of the reference material that he referred to?
19	A	I read Hoekstra's
20		paper that he referred to.
21	Q	I see, that is the only
22		one, is it, sir?
23	A	And I have now read
24		the frost heave report done at the Calgary site.
25	Q	When did you read that,
26		sir?
27	A	Very recently, last night.
28	Q	Last night. Has Mr.
29		Howe read that too?
30	A	Pardon me?

K. Adam

Cross-exam by Marshall

10794

Q Has Mr. Howe read that report as well?

A Yes.

Q It seemed to me, sir, that there was a fairly substantial difference in the

-- between the results that N.E.S. obtained as reported in their frost heave report you read and the testimony of Dr. Williams as to the pulling forces that he predicts would be encountered. Now, sir, I was wondering whether or not in reaching the conclusion that you

generally agree with Dr. Williams about these pulling forces, you found fault with some aspects of the work done by N.E.S. in their frost effects study.

A I am sorry, I --

Q In order to agree with

Dr. Williams, did you have to disagree with N.E.S.

and the results which they have indicated in their

reports they obtained.

A After reading the report

I would have to say that again our doubts were rein-

forced.

Q Now, when you say "our",

I am sorry, I don't want to interrupt you, but when you

say "our" could you be specific, you are talking about

yourself?

A Yes, I am referring to

both myself and George Howe.

If I could just, as an example,

there is a figure in there, Figure 249 which has --

THE COMMISSIONER: That is in

1 the Calgary Frost Heave Report.

2 A In the Calgary Frost Heave

3 Report. There is a graph of heave in feet versus

4 time and days in which surcharged loads were added

5 at various times and from what we make of it, these

6 loads had little effect on the rate of heave, and on

7 the basis of the field tests I do not understand how

8 the conclusion was drawn that surcharged pressure

9 reduced the heave or the rate of heave.

10 Q Could you be more specific

11 as to what it is that you -- which particular passage

12 or which particular conclusion you're unable to

13 find support for?

14 A Well, one of the things

15 was mainly when a substantial load was put on, I think

16 there was an increase in load of something like 200

17 tons that in fact the heave rate didn't go down at all.

18 In fact it appears from the graph that it went up.

19 Q Are there any other

20 examples that you can think of, sir, that led you to

21 have some doubt as to the validity of the frost

22 effects report?

23 A I would think probably

24 one area of disagreement is the concept of separating

25 the pore volume expansion and the ice lensing portion

26 of the heave. Basically this doubt arises from the

27 fact that if in fact they can be separated, then one

28 should never find in nature a situation where you have

29 ice lensing without the pore volume being completely

30 filled with ice and yet we know the situation exists in

nature.

Q Well, sir, I may be wrong

about this, but my understanding was that the approach taken by N.E.S. was that an assumption is made that

there will be expansion -- there will be freezing and expansion of all the in situ ice, a 9% expansion, so

there is a calculation made as to the volume of

water that would be within the soil in question and

it is assumed that there is going to be expansion

equal to the freezing of all of that water which is

a conservative approach inasmuch as not all of that

water would necessarily freeze at the temperatures

that would be encountered. That having been done

then, that component is completely accounted for

in a conservative way and the attention is then

directed to the ice lensing that may occur. I don't

know whether my explanation helps at all, but do you

find fault with that?

A Yes, I would have to

say I do because we know that you can get a redistri-

bution of moisture within a soil under frozen conditions

and providing this volume of water within the pores

or ice, if you like, if that increases by 9% then you

have got a 9% expansion, but if say, 30%, maybe that

is high, let's say 20% of a particular soil is void

and that water moves out of the void and freezes,

then conceivably you could get more than a 9% increase

if it redistributed in the form of an ice lens. I am

not saying that that would happen, but I can conceive

of that being a possibility. At least we know that it

happens to the extent that the soil voids do not

remain built.

A

Let's see if I understand you correctly. You think that water is found largely

in the voids between the soils and one can account for the expansion due to all that freezing providing it

remained in place, there would be 9% expansion, but

you say that some of that water may migrate to other

areas and wouldn't expand within the voids, but would

expand in some other area and as a consequence you

could have expansion of more than 9%?

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A I can conceive of that,

and I can conceive of it mainly in the context of a

situation where there is not an over-abundance of water.

Q Well, have you got any

experimental data at all, sir, that analyzed such a phenomenon that you say you can conceive of?

A No, I haven't.

Q Have you got any estimate

as to the effect that this might have on the total

expansion into insitu water freezing? What I'm trying

to get at is this, sir, if one can calculate fairly

easily, I guess, that if all of the insitu water

remained in place and expanded there would be a 9 %

expansion. Anyone who makes ice cubes knows that.

If a conservative assumption is

made that all of that water is going to freeze and thus

expand, you end up with a certain amount of heave. Now

how much more heave do you think might result if some

of this water migrates to other places before it

freezes? Have you got any estimate of that?

A No, but I would say that

from an engineering point of view probably what you're

more interested in is not in the amount of extra

expansion you get, but in the extra pressures that you

generate, there could be a very small difference, but

it could result in higher pressures.

Q Higher pressures of what

sir? I'm sorry.

A Well, I'm thinking in

the context more of a restrained condition. That is

1 incrementally, with a small increase in the amount of

ice you could get a larger pressure.

Q You've been going through

for me some of the aspects of the frost effects study

of N.E.S. that you didn't really agree with, based on

your review of it, last evening and I was wondering,

sir, if there were any other aspects that come to mind

that you and Mr. Howe felt you weren't satisfied with

or you felt were incorrect?

A No, I would think on a

first reading that that's really what stood out in my

view.

Q There are really basically

two points then.

A Yes.

Q Sir, have you been able

to discuss your views on these points with any members

of the Board? I appreciate you just read it last night,

A No, I have talked with

the Chairman of the Board, but other than that --

Q Now, sir, just if I may

turn to the other point that you were discussing with

the Commissioner pertaining to the last point of chilling

in the selection or recommendation that would be at or

near the Willow Lake River, you indicated that there

was bore hole information which showed permafrost and

the presence of excess ice. Do I take it from your

answer to the Commissioner that it was essentially on

the basis of this bore hole data that you formed the

judgment as to what would be the appropriate point at

1 which to stop chilling, or were there other factors?

2 A No, we were basically

3 interested from an environmental point of view, and

4 it was made -- I should say the original assessment

5 was made on the basis of those bore holes. I should

6 probably add that since then quite recently we have

7 obtained the information drilling all the logs from the

8 Mackenzie Highway and we are the first to admit that

9 in certain areas, due to the different alignments of

10 the highway and the pipeline, that you have to, you

11 know, read the information in that context. But even

12 on that basis, the analysis on the basis of many more

13 holes roughly in the order of between 12 and 1,300

14 holes, that the analysis did nothing but reinforce our

15 earlier information, and the only thing we noticed was

16 that in the one area where the highway is closer to

17 the Mackenzie River, the incidence of permafrost in

18 holes was somewhat reduced; but we mostly I think might

19 expect that.

20 Q Essentially though,

21 the opinion that's been put forward in the recommenda-

22 tion is based on information gathered from bore holes.

23 A By the Board?

24 Q Well, for the Board.

25 A For the Board, yes.

26 Q You mentioned that it was

27 only recently that you got the 1,200 -- the information

28 on the 1,200 bore holes. How recently?

29 A I would say in the last

month.

Q Have you had an opportunity

yet to carry out a detailed analysis of the information?

A Yes, we have had numerous

people working on it full-time over the last couple of

weeks, and we have the information tabulated to our

satisfaction.

Q Sir, the reason for

getting into this area with you is simply this. I under-

stand from my advisors that while indeed the

factors that you have considered in reaching the con-

clusion are important ones and should be taken into

account, there are many, many other factors that go

into the decision of which is the optimum point at

which to stop chilling. I suggest to you that

probably you haven't had available to you all the

types of information that really should go into the

decision-making process on this point, and that it's

perhaps a bit premature on the part of yourself to

make a judgment on it.

A Are you suggesting that

we've had problems getting information?

Q No, I'm suggesting, sir,

there are -- you seem to have easy access to many

sources of information, but I gather that there are

a number of other factors that have to be taken into

account, and I'll go through them with you. Perhaps,

sir, you can tell me whether or not you think that

these are matters that should be taken into

account as well. One would be the aerial distribution

of permafrost.

K. Adam
Cross-Exam by Marshall

I take it that to some extent you consider as a

bore hole aerial, area.

THE COMMISSIONER: There's only

one thing that can mean.

MR. MARSHALL:

It can't mean up there.

A Can I comment on these one

one? Well, I felt on reading the testimony that there

been many people that there's been some confusion on

this topic of permafrost. Basically what we're intereste

in is excess ice. Any earth material can be frozen

and thereby be permafrost, as long as it's frozen over

a year or more. But I have difficulty just on the

basis of permafrost alone saying that that is all that

important a factor.

Q I think it's obvious.

There's no problem with that, we agree with you.

A Pardon?

Q I think there's agreement

on that point. That's just one of the factors.

The extent of permafrost--

THE COMMISSIONER: You get an

"A" for that one, he's giving you an "A".

MR. MARSHALL: To the extent the dist-

tribution of permafrost is one factor, but that's not

the only factor. The second would be the depth of

permafrost and its ice content. Would you agree with

that?

A Certainly.

Q And the third would be

frost susceptibility of the unfrozen soil to dictate

the depth of burial and the height of the surcharge berm.

A Yes.

Q Then the inter-action

between the pipe and the soil as relates to frost heaving and thaw settlement, degree of bend angles, local instability of the pipe, particularly in soft soils such as maybe encountered by thawing out permafrost, would that be another factor -- pipe-soil interaction?

A Yes.

Q And the stability of thawing out permafrost slopes with a warm pipe.

A Certainly.

Q That's another factor.

to be taken into account; and also drainage and erosion control of a thawing and settling situation as compared with a freezing and heaving situation.

A Certainly. Here I would

say that our basis of two feet settlement is certainly related to erosion and channelling along the pipeline.

Q The point I'm making, sir,

is this. Do you feel that you have enough information pertaining to each of these six areas that I've discussed with you to enable you to make a recommendation

as to the optimum point at which to cease chilling?

A From an environmental

point of view, I think we do.

Q Well, from the point of

view of those six factors, take for example pipe-soil

inter-action, do you have information as to what the

inter-action would be between the pipe and the soil

under various conditions?

A I think I could say that

wasn't a particularly important aspect from our point

of view.

Q It's not considered to be

that important by --

A From an environmental point of

Q You would agree, though,

that from the point of view of the pipeline security,

that it may be a very important factor indeed?

A Certainly, and it does

bring up to us, and this is a major concern of the

Board and has been, is the possibility of a rupture,

due to the soil-pipe interaction.

Q Well, is this whole

area of pipe-soil interaction one the Board has been

able to study?

A In detail, I would say

not.

Q Indeed, it requires the

stress analysis of the pipe, doesn't it, as an integral

part of it?

A Yes.

Q To change to the topic of

snow roads, Dr. Adam, in your report as found in the

fourth volume of the E.P.B.'s impact statement, could

you tell me, sir, when it was written, when your

report was written?

crossed by many

Wittgen?

THE COMMISSIONER: Some have

A The work was done carefully

publication.

that you're aware that the construction plan of Arctic Gas, which I assume is the one that you're referring to

For winter construction than you suggested in your

Report.

A I am aware that +

report was done on preliminary information, and

Q As I understand your

report, sir, one of your concerns was that construction

wasn't scheduled to start early enough to take

advantage of the full period in which you determine

snow roads might be used.

A That is correct.

Q And are you familiar with the

with the changes that have been made from the construction

schedule that were working when preparing

report, to the construction schedule that a 17.

Do you know what the differences are as to startup

dates and number of calendar and construction days?

A Yes, I certainly could.

quote you the dates, but I'm roughly familiar with

1 them. Are you referring to the bar graphs in particular?

Q Yes.

A Yes, I'm familiar with

them.

Q Generally there's a much

earlier start, of the schedule than your report indicated. I'll get more specific as we go along, but that's general so, is it not?

A Certainly.

Q And I suppose it would

follow then that your concern has been to some extent

met?

A Well, that's a little

difficult for me to answer, in that my analysis was

done on the basis of a length of season, whereas you're

talking more now about specific dates.

1 I like the change in the
2 extent that it makes use of the whole winter road
3 season. I am now, however, somewhat concerned and
4 always have been about setting specific dates, either
5 for starting winter road use or curtailing it. I
6 do realize from a planning point of view that your
7 people have to work with something, though.

8 Q Well, generally though,
9 you consider the change to an earlier start up date
10 to be an improvement?

11 A I do to the extent
12 that, I believe, you have some dates on the bar graph,
13 October 15th, I would suggest to you that the
14 probability of being able to start then without doing
15 -- I should say in certain years, the results of
16 starting then could be very severe as far as the
17 terrain goes.

18 Q Well, I will take you

19 through some of the details, sir. It is just simply
20 as Mr. Hollingworth would say, a proposition of one
21 syllable words. You comment in your report that
22 they are not making enough use of the available period
23 during which snow roads would be available. Now,
24 the change to an earlier start up date surely goes
25 some way towards meeting your concern.

26 A It is a hard question
27 to say no to, but you can go back so early that you
28 are late.

(LAUGHTER)

Q I hope you haven't checked

1 out today Dr. Adam, because I think we are probably going
2 to continue tomorrow.
3
4 point. I suppose we should be a little clearer as
5 to the references that were being given. You had
6 stated on page 33, quote:
7 "The applicant has indicated that
8 105 calendar days are available
9 for construction in the upper
10 Mackenzie area,...."
11 Fort Simpson, Norman Wells, and that 120 calendar
12 days are available north at Fort Good Hope, and near
13 the bottom of the right-hand column you say:
14 "Current plans have scheduled construction
15 to begin December 31st / January 1st."
16 Now, those aren't the dates that are set out in
17 the bar graphs in the Arctic Gas construction schedule,
18 section 13.A.2., are they?
19 A That is correct.
20 O Okay. Now, for clarifi-
21 cation, when you talk about construction to begin as
22 you have in that statement, what aspect of construction
23 are you referring to, would that be snow road construction
24 or ditching or welding? What are you talking about?
25 A Well, at the time I
26 did this work my approach was to -- I felt there was
27 a problem -- and my approach was to try and give Gas
28 Arctic every benefit of the doubt and still illustrate
29 that the season of use of winter roads, as I understood
30 it, did not encompass the same time period that they

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were stating was required for construction of the

pipeline.

Q Sir, I guess I am not

making myself clear enough. I am simply interested in a kind of simple point. When you said in this statement

on page 33, quote:

"Current plans of scheduled construction

to begin December 31st/ January 1st."

End quote, were you talking about the start of snow

road construction or the start of ditching operations,

or start of welding?

A I made the assumption

that based on information from the literature as to

when the first possible day that you could expect

to start building winter roads. I assumed that

they could lay down some road that day and start

constructing the pipeline right after.

Q Well, sir, you were

obviously having regard to an earlier draft of the

construction schedule, a schedule different from that

than has been filed, because you say current plans.

Now, are you talking about Arctic Gas plans are you

not?

A Yes.

Q "...have scheduled

construction to begin...."

A Okay.

Q Now, it is their schedule

not your schedule that you are talking about there?

A That information was from

1 a preliminary draft of CAGSL's construction schedule.

2 Q Now, what did you understand

3 would be carried out when construction was started

4 December 31st/January 1st? Did you think it was

5 going to be laying snowroads then or did you think

6 that there was going to be ditching start then or

7 welding or did you think all of these things would

8 start at the same time?

9 A No, I assumed in that

10 case that the roads would be essentially laid down

11 by that time. We didn't have to make that assumption,

12 but I mean in the back of my mind, that's the way I

13 understood it.

14 Q Well, surely from the

15 schedule that you had provided to you you knew it

16 was one activity or another. That is really all I

17 am interested in. I am not familiar with this

18 earlier draft schedule and I am wondering what activity

19 was going to get started on that date and I take it

20 it was pipe laying operations, was it?

21 A Basically it was the

22 first day that you could start building winter roads,

23 but to give them every benefit of the doubt as far

24 as the number of construction days required I made

25 the assumption that they could start constructing the

26 pipeline that same day and my reason for doing this

27 was I hoped not to be criticized for being unfair,

28 but at the same time show that there was a problem

29 with winter roads in that there was only a certain

30 probability that in any given year that a spread could

be completed using the stated number of days on winter

1 roads.
2 Q We are like ships passing in
3 the night, I am afraid. You received some information
4 from Arctic Gas which was the information then that
5 you based your work upon. You had information from
6 them as to what they were going to do and when they
7 were going to do it, is that correct? That was the
8 take off point.

9 A Yes,
10 Q That is what it was that
11 you were analysing, okay. Now, they gave you a preliminary
12 draft of the construction schedule.

13 A That is correct.
14 Q Agreed? Now, you say
15 that that schedule showed construction to begin
16 December 31st, right? Now, that is their statement,
17 not your assumption or anything --

18 A That 's right, just
19 their statement.

20 Q You are just repeating
21 what you were told by Arctic Gas --

22 A That is correct.
23 Q --in this graph schedule,
24 that construction would begin on that date, okay? Now,
25 did the schedule tell you what construction activity
26 would begin on that date? Were there bar graphs such
27 as have been filed in the construction plan that
28 showed you what they meant when they said construction
29 would start on that date?

30 A I just have problems

1 visualizing that particular bar graph, but I seem to
2 recall that that is correct, there were other activities
3 all the activities were listed on the same bar graph.
4 Q Well, is it your recol-
5 lection, sir, that the December 31st/ January 1st date
6 would have seen the start of pipe laying with the
7 preparatory activities having taken place prior to
8 that date?

Yes.

Q I see, fine.

MR. GOUDGE: Mr. Commissioner,

I note that it is 4:30 now, and Mr. Marshall is

pausing. I wonder if I might request that we adjourn.

The reporters have had a long day and are operating

under a handicap of voice. One of them has laryngitis

and it makes it difficult. I ask that we could adjourn,

perhaps until tomorrow morning?

THE COMMISSIONER: Yes,

certainly. Well, we will adjourn until 8 o'clock this

evening when we will hear the Community of Yellowknife

at the Elks Hall and the formal hearings will

reconvene at ten in the morning here.

(PROCEEDINGS ADJOURNED TO 10 A.M. OCTOBER 16, 1975)

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